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Some Opinions and Comments on Current Telephone Topics

It is expected that the new year will see the telephone industry, to some extent, drawn into the Washington hearings on the communications situation. Radio and telegraph so far have occupied the limelight in the inquiry preliminary to action on the federal communications commission bill, but its importance in the field of communication will probably involve the telephone also before the investigation is concluded.

Incidental references already have been made to the telephone, and they have been of a favorable nature, compared to the brickbats that have been hurled back and forth regarding radio patent pools and the attempts to establish a monopoly in the radio and telegraph fields. These two red-hot issues are likely to keep the Senate committee so busy that it is probable the telephone will not be subjected to a similar overhauling—especially as the telephone is doing such an efficient service job all over the country, as is generally conceded.

* * * *

There are some angles of the telephone situation that Washington will be curious to investigate, and if a general airing follows, the Pacific Coast demand for a congressional investigation of the Bell organization will have a hearing. The senators from those states are interested in granting the wishes of their constituents, but the extent of any telephone inquiry will depend largely on the progress and direction of the proposed radio and telegraph monopoly investigation.

That word, "monopoly," by the way, is what sticks in the craw of the average law-maker at Washington who is sensitive to public opinion; and that applies to monopoly in manufacturing as well as monopoly in service.

* * * *

Incidentally, it is funny how the great business leaders change their minds. For years they have boasted of the superiority of American communication systems over Europe's. They said the principal reason was because of the policy of European government ownership. Of course, they were opposed to government ownership and operation.

Now, however, they argue that America must follow Europe's example and merge communication lines or we will have to play second fiddle to foreign interests. The European ideas are now pictured as the only ones to be copied, because these prominent business leaders want to consolidate. They want a monopoly in radio and telegraph.

European ideas were no good when they wanted an argument against government ownership, but they are "great stuff" when they can be utilized to bring about the monopoly they desire. It all depends on the point of view, and even that changes from time to time.

Extension Telephones.

Secretary Davis, of the federal Department of Labor, suggests an eight-hour day and an annual vacation of two weeks "with pay" for housewives. Whether this is simply one of the developments of the present trend toward shorter working hours, or indicates that Mr. Davis is making a strong bid for the woman vote, is hard to say at this time. The fact remains, however, that any move in the direction of lightening labor will be a popular one in this age of labor-saving devices.

Perhaps Secretary Davis overlooked t in the press of other matters, but if he is really concerned about easing the burden of the home-keepers, he might well have urged the installation of more extension telephones in the home.

Housewives would be saved many unnecessary steps and much time if they were not obliged to climb up and downstairs to answer calls that come in on the single residence telephone. Telephone companies which are intelligently pushing sales of extension sets are finding this a good avenue leading to increased earnings.

Time and labor-saving devices have become as popular in the home as in the office or business plant, as is proved by the growing sales of washing machines, electric irons, vacuum cleaners and similar conveniences.

No one will deny that woman's work is equally as important as man's, and that efficiency belongs in the home as well as in the office.

And, beyond all doubt, the venturesome male who is rash enough to deny it, will soon discover his mistake. If the modern housewife wants a machine to do her

work, or an extension telephone on the second floor of the home, she is pretty sure to get it. Telephone companies should bear this in mind and direct their sales efforts at "the missus."

* * * *

Speaking of the multiplication of telephones, Julius H. Barnes made an interesting statement recently over the radio, while commenting on the business conferences held by President Hoover. Referring to the need for industry to carry on in 1930, in order to strengthen confidence, Mr. Barnes said that "American living standards, the envy of the world, are approaching the two-telephone status in American homes." As a boost for extension telephones, Mr. Barnes' radio remarks are of considerable value.

"Of course," he said, "we all want an extension telephone beside our bed. It saves time and effort, and time is of increasing value in the American earning scale. That two-telephone standard is also on the way if American business is kept alive and virile."

This statement resembles the declaration of Arthur Brisbane that every American family would soon own two automobiles. It ought to be much easier for the telephone companies to put their patrons on the "two" basis, than for the car makers to sell the average citizen his second automobile.

Telephone Requirements.

The important relation of the telephone industry to the welfare of business as a whole, in its annual requirements that contribute to the prosperity of other lines, was forcibly illustrated at the recent business conferences at Washington. The speakers for the mining industry laid emphasis on the activity of telephone companies in 1930 as encouraging signs for good business.

They stated that lead is largely used in covering cables, and that orders placed for 1930 far exceed those on hand a year ago. Referring to copper, one of the speakers said that the consumption of the world's total production is equally divided between the United States and the rest of the world. As this country alone uses one-half of the entire world's supply, American demands have a great influence on the condition of the copper industry.

"Over 50 per cent of the copper used goes into electrical purposes," said he. "When we hear that the telephone and telegraph companies, and the electric light and power companies are going to increase their business in the coming year, we may rest assured that the copper business will find a continuance of the past."

* * * *

A good argument in favor of intercommunicating telephone systems is found in an article written by Floyd W. Parsons on the general subject of increasing business efficiency. His comment follows:

"Often it is a good plan to examine carefully the floor plans of offices and factories with the idea of eliminating unnecessary walking on the part of employes. In many offices and manufacturing establishments today, a rearrangement of furniture, partitions and general equipment could be so effected that hundreds of feet of walking by workers could be eliminated.

"The installation of an intercommunicating telephone system will frequently do away with much useless and expensive traveling to and fro. This also cuts down the frequency of office visits."

There is an idea that enterprising telephone managers can pass on to their business subscribers having large plants, with prospect of extending telephone service.

COMING CONVENTIONS.

South Dakota Telephone Association, Watertown, Hotel Lincoln, January 14, 15 and 16.

Arkansas Telephone Association, Little Rock, Gleason Hotel, January 20 and 21.

Minnesota Telephone Association, Minneapolis, Radisson Hotel, January 28, 29 and 30.

Nebraska Telephone Association, Omaha, Hotel Paxton, February 11, 12 and 13.

Oklahoma Utilities Association, Tulsa, Mayo Hotel, March 11, 12 and 13.

Texas Independent Telephone Association, Fort Worth, Texas Hotel, March 18, 19 and 20.

Iowa Independent Telephone Association, Des Moines, Hotel Fort Des Moines, April 8, 9 and 10.

Ohio Independent Telephone Association, Columbus, Deshler-Wallick Hotel, April 15, 16 and 17.

Indiana Telephone Association, Indianapolis, Claypool Hotel, May 6, 7 and 8.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 13, 14 and 15.

Up-State Telephone Association of New York, Rochester, May 21, 22 and 23.

Telephone Work Notes That Pay Interest

In Any Job an Ounce of Interest Is Worth a Pound of Effort—Service Fundamentals—Relative Efficiency of Circuits—Magneto Exchange Maintenance Studies—Inspection of Main Frames—Some Successful Testing Methods

By T. De Witt Talmage

Transmission Engineer, Illinois Telephone Association, Springfield, Ill.

Taking notes is one way of retaining information for future use. The writer has formed a habit of note-taking and during the past years this habit has developed into a hobby. As a result of this hobby several voluminous note books have been compiled.

One section of these note books is devoted to transmission information. This section covers many problems that are met with in the everyday operation of a telephone plant, and has been used as a basis for short plant schools in which transmission problems have been considered. A careful study of these notes shows that transmission maintenance practices are not as mysterious and difficult as from first acquaintance they might appear. Moreover, this phase of telephone work is more interesting and fascinating than the average person realizes.

It has been wisely said that the competent telephone employe should know something about everything, and everything about something. If this is true, it may be that departments other than plant and engineering will find these notes of interest. Such material serves to stimulate interest in these and other transmission applications encountered in daily work, as well as serving as a foundation for further reading which deals intimately with specified duties.

Some of the notes may appear to be a bit technical, but the majority of the material is so easy to understand that it may be readily grasped by anyone with

practical experience in telephone work.

The section on transmission information starts out by asking the question: "What are the general requirements for efficient transmission?"

Transmission Requirements

In order to be efficient, a telephone system must have the ability to pick-up, transmit and reproduce the human voice with sufficient volume and good quality, and at the same time be free from any disturbing noises which detract from speech intelligibility. Therefore, the three essential fundamentals of good transmission may be said to be sufficient volume, good quality and the absence of disturbing noises. In addition to these characteristics, efficient operation dictates that the plant be properly used and maintained in order that certain service requirements, such as continuity of service, be met.

The electric current in a telephone circuit during a conversation is a complex one, made up of continually-changing frequencies between 20 and 10,000 cycles per second. The volume of a voice at the listening end of a telephone circuit depends upon both the magnitudes and the frequencies of the voice currents which are transmitted over the circuit. The quality of the voice currents depends primarily upon the accuracy with which these various frequencies of the transmitted voice are reproduced by the receiving apparatus.

The losses which impair the volume of a conversation are chiefly due to attenuation or simple weakening of the voice currents, while quality is impaired principally by distortion. Distortion may be caused by either the transmission of different frequencies with different efficiencies, or by the introduction of frequencies not present in the original sound. Cable circuits cause more distortion than open-wire lines.

In long circuits involving very considerable lengths of line, the losses that occur in the line itself constitute a major portion of the total transmission losses. The efficiency of a telephone connection over great distances may be less than 0.1 per cent without making the conversation difficult. That is, a transmitter may deliver approximately 0.004 watt to the telephone connection, of which less than four-millionths of a watt may eventually reach the receiver, and yet a satisfactory conversation may be carried on.

The received current may vary from as high as three-thousandth of an ampere to as low as one ten-thousandth of an ampere, a variation of over 900 times in power. Thus we can readily understand the necessity of the telephone receiver being such a sensitive piece of apparatus. It is little wonder that bent, rusty, reversed and improper diaphragms, loose receiver caps, weak magnets and similar troubles in receivers invariably result in mediocre service.

The losses in a telephone connection may be divided roughly into two general classes; that is, losses in outside plant, and losses in inside plant. Careful consideration must be given to the makeup of circuits in both classes of plant in order that these losses be kept within tolerable limits.

Circuit Efficiency.

In order to determine or compute the normal transmission loss of the many and varied types of telephone circuits, certain tables have been compiled which give this information in terms of the unit of telephone transmission, called the decibel. The fundamental unit of transmission is called the bel, which name was derived from the name of Alexander Graham Bell and in his honor.

In accordance with the terminology of the decimal system, the prefix "deci" is used to indicate a one-tenth relation. In other words, the word decibel means one-tenth of a bel. For convenience, the symbol db is employed to indicate the name decibel.

The db represents a fixed percentage reduction in electrical power no matter what frequency is involved. Its magnitude may perhaps best be grasped by remembering that in a circuit equating 10.0 db, the output power will always be one-tenth of the input power. This also means that 1.0 db represents a loss of electrical energy or force about equal to that caused by a mile of standard No. 19 gauge cable. This relation is not quite mathematically correct, but it is close enough for most practical purposes.

Standard toll connections, from the transmitter of one station to the receiver of the other station, have a maximum overall transmission loss of 30.0 to 33.0 db. In local connections the overall loss is considerably less. It is, therefore, necessary to know the transmission characteristics of telephone circuits in order to design the plant economically and correctly from a transmission standpoint.

Fig. 1 illustrates the relative transmission efficiency of different types of circuits. This chart gives the number of circuit miles of line which cause a transmission loss of 1.0 db, and illustrates the comparative transmission efficiency of 14 common types of standard circuits.

The wire size of the first three open copper wire circuits is given in inches in diameter. The next five open iron wire circuits are designated in size by use of the Birmingham wire gauge, and the last six cable circuits are designated in size by the American wire gauge, also called Brown & Sharpe gauge.

The cable circuits' transmission loss varies somewhat for the same gauge of cable conductors, due to the fact that cables are manufactured under various specifications resulting in various electrostatic capacities. For example, one manufacturer makes No. 22 gauge with four different values of mutual capacity. The transmission loss per mile of the highest capacity cable is 1.55 db, while the loss of the lowest capacity cable is 1.81 db. The average of these four cables is 1.67 db per mile. The transmission losses shown in the chart, Fig. 1, are the losses for the best grade of cable in each class.

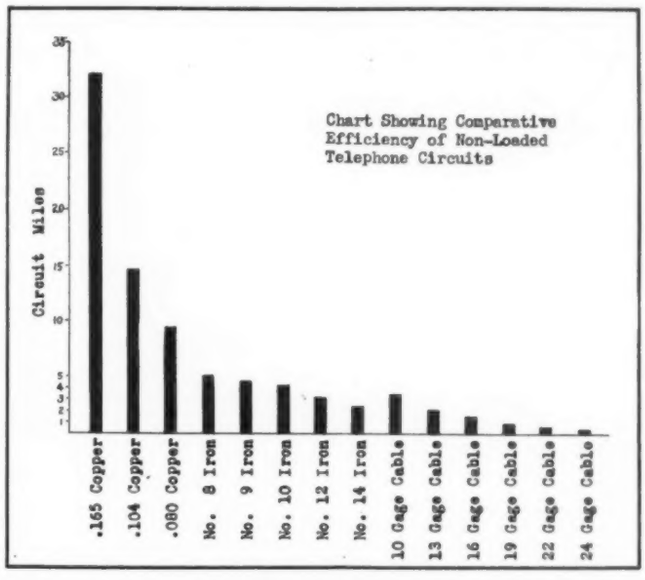

Fig. 1 Illustrating Number of Miles of Circuit Causing a Transmission Loss of 1.0 DB.

Using a current measuring frequency of 1,000 cycles per second it has been found that slightly over 32 miles of 0.165 open copper wire circuit, under standard construction, measures 1.0 db. Likewise, slightly over four miles of new No. 10 iron wire measures 1.0 db.

Referring to Fig. 1, it will be noted that the column above No. 10 iron wire indicates 4.16 circuit miles causing a transmission loss of 1.0 db. One mile of new No. 10 iron wire, therefore, has a loss of about one-fourth that value or 0.24 db. This value, 0.24 db, is called the "transmission equivalent" of new No. 10 iron wire.

The "transmission equivalent" or transmission loss per mile for the circuits included in the chart in Fig. 1 may be readily obtained by dividing the number of circuit miles shown at the left side of the chart into 1. Mathematically speaking, the transmission loss per mile of these circuits is the reciprocal of the values shown under "circuit miles."

A reciprocal is the quotient that results from dividing unity by any quantity. For

example, the transmission loss per mile of 0.080 copper wire is 1 divided by 9.44 or 0.106 db. The transmission loss per mile of new No. 8 iron wire is 1 divided by 5 or 0.20 db. The transmission loss per mile

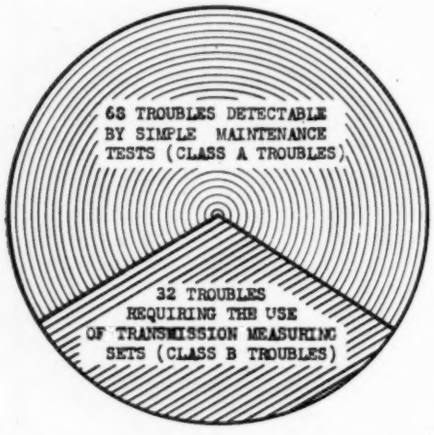
68 TROUBLES DETECTABLE BY SIMPLE MAINTENANCE TESTS (CLASS A TROUBLES)
32 TROUBLES REQUIRING THE USE OF TRANSMISSION MEASURING SETS (CLASS B TROUBLES)

Fig. 2. Analysis of Troubles Found in Central Office Inspections in Magneto Exchanges.

of No. 16 gauge cable is 1 divided by 1.37 or 0.73 db.

This chart indicates that No. 16 gauge cable is about three times more efficient than No. 24 gauge cable; that No. 8 iron wire is more than twice as efficient as No. 14 iron wire; and that 0.104 copper wire is five times more efficient than No. 12 iron wire, etc. Fig. 1, therefore, gives in graphic form the comparative transmission characteristics of standard types of non-loaded physical or side circuits.

There is an old saying that one hour of planning and seven hours of work are better than ten hours of work with no planning. The truth of this statement is self-evident. If proof is needed, we need only point to the plants which grew rather hodge podge in the beginning that are now being rebuilt more systematically. The intelligent relocating of the leads and regrouping of the stations will result in a more economical plant and a better balanced plant, with fewer stations per circuit, shorter circuits and the resulting betterment of transmission and service in general.

In many cases the necessity for uninterrupted service and the size of these leads justifies the extension of cable facilities farther out from the exchange into the rural teritory. The result is increased reliability even though accompanied by some sacrifice in transmission. Utilizing what we have just learned about circuit efficiency, it may be found advisable to use cable composed of several different gauges of conductors.

The more important toll circuits could then be worked through the larger gauge conductors and the subscribers' circuits through the usual small gauge conductors. The correct gauge to use will depend not only on the present length of the cable and circuit in question and the required standard for that particular circuit, but consideration should be given to the ultimate cable plans for that lead. The chart in Fig. 1 could well be used in making such studies of plant rehabilitation.

The maintenance of these cables should also be taken into consideration at the time of the purchase of the cable from the manufacturer. For instance, the location of trouble due to a water-soaked spot in a cable is sometimes very difficult as there are no good wires running to the end which can be used for a loop test. New cables are being manufactured with a pair or quad of enameled wire in order to insure a good wire for Varley measurements with a Wheatstone bridge, even though a cable may be saturated with water at a given point.

The term "quad," as applied to cables, means two pairs of wires twisted together. In a telephone cable, the two conductors of a pair forming a talking circuit are twisted together, and each half-twist forms what might be called a transposition. If two pairs are to be used as the side circuits of a phantom, these in turn are twisted together, and the four-conductor combination is called a quad. A quad corresponds to four wires of an open-wire line which are transposed for phantom operation.

Central Office Maintenance.

To analyze all the possible losses in the inside plant equipment is a problem too large to be attempted here. It might be said briefly that the losses come under two main heads: Faulty circuit design and faulty equipment.

There are some circuits in use which would produce great losses even if the equipment were the best, and there are other circuits, which while correct in design are deficient because the equipment used is of poor design. Between these two possibilities there can be any number of variations too numerous to mention, such as construction, installation, maintenance, etc.

Facts concerning maintenance, not theories, are of great benefit to operating companies because they aid in doing a successful job. The Chinese have a saying that a picture is worth a thousand words. Facts represented in a picture, if simple and condensed, are easy to understand. The value of statistics, either in graphic presentation or in numerical tabulation, should not be overlooked.

Statistics are generally supposed to be a rather dry and uninteresting subject and tolerated only as a necessary evil, but at the same time they are highly informative. The proof of this statement will soon be undertaken.

The academic definition of this useful adjunct is that "statistics is a science which treats of the collection and arrangement of facts and figures for the purpose of comparing units that are related or of investigating and analyzing the phenomena behind the figures." Freely translated, this awe-inspiring definition only means that statistics are the interpretation of past experience. The careful scrutinizing of statistics will aid materially in forming conclusions and will serve as a guide for future plans and policies.

Some maintenance studies have been made of central office troubles in magneto exchanges. The statistics gathered in one study and inspection of a group of representative exchanges resulted in the graph shown in Fig. 2.

Over two-thirds of the troubles found were simple Class A troubles which could be detected and cleared in connection with the regular day-to-day routine maintenance work of the alert magneto exchange repairman. The remainder of the troubles were Class B troubles which could be more easily located with transmission measuring instruments. One of the great sources of loss in the Class B trouble group are inefficient repeating coils. Later in this article a simple method will be discussed by which Class A troubles can be reduced.

Inspection of Distributing Frames.

A state telephone service inspector once said that he could judge to a certain extent the grade of telephone service being furnished to a community by noting the maintenance condition of the central office equipment—the distributing frame in particular.

His contention was that a distributing frame that was used as a storage rack for

Form No. 501 Office _____

Routine
PLANT MAINTENANCE OBSERVATIONS
Main Frames

Order, Job or Estimate Number _____ Date _____

Date of Completion _____

Items to Inspect	Satisfactory	LIST CONDITIONS UNSATISFACTORY
Laying in Jumpers		
Skinning and Connecting		
Soldering		
Removal of Jumpers		
Work at Protector		
Protectors		
Clerical Data		
Cleanliness		
Hazards		

CLASSIFICATION OF OBSERVATION : SATISFACTORY _____ UNSATISFACTORY _____

SIGNED _____ TITLE _____
DATE _____

NOTE: LIST ON REVERSE SIDE OPPORTUNITIES FOR IMPROVEMENT

Fig. 3. Inspection Report Form 5½ Ins. by 8½ Ins.

brooms and dust mops, whose dusty horizontal distributing levels were utilized as shelves for storing blueprints and catalogs, and whose general appearance resembled one corner of the Old Curiosty Shop, indicated an unbusiness like attitude on the

part of the management. It was only a logical assumption that the service of this exchange was of the same general character, and rather mediocre in quality.

One of the more systematic superintendents attacked this problem by use of a report form for an organized inspection of main frames in a group of exchanges which had been recently acquired in a consolidation. The inspection was made in connection with other central office inspection work. Highly successful results were obtained with a report form similar to that shown in Fig. 3. While this report form shows only main-frame items, it could easily be expanded to include all central office frames and racks, such as relay racks, coil racks, fuses panels, cable racks, etc.

Inspection of distributing frames and racks in this case was put on a quarterly basis; that is, the schedule called for such an observation once every three months.

Routine tests and inspections of distributing frames should include the testing of heat coil resistance, especially where the carbon composition type of coil is still in use. This type of heat coil is no longer manufactured. This sort of heat coil has a tendency to increase in resistance and is a very common cause of unbalance and poor transmission. In the periodic tests, all coils which show an abnormally high resistance (standard resistance of this type of old coil is 14 ohms) should be replaced with wire-wound heat coils whose resistance is in the neighborhood of 4 ohms.

This difference of 10 ohms will result in a reduction of 20 ohms resistance in each circuit or a 40-ohm reduction in each connection between two circuits. This is the minimum improvement. Many of these heat coils will be found to be substantially higher in resistance than the normal value, and in the long run the average improvement per connection may be even greater than 40 ohms.

Further thought will reveal that these troubles are cumulative or additive, and while one trouble may not be seriously noticeable, the presence of several in a connection may result in an unsatisfactory call.

Obviously, this item of heat-coil resistance is only a drop in the bucket, but in significance it is tremendously important. It shows that every part of the central office equipment, no matter how small, must receive its due share of attention. And it is typical of many other improvements, great and small, which together present an imposing total.

If progress is to be made, we must face the facts as we find them. If this is done, excessive transmission losses due to improper heat coils or poor contacts between heat coils and protector springs will soon be eliminated. In this connection it is important to keep heat coils, fuses, terminals and mountings and other similar contacts cleaned on account of the resistance that otherwise may be introduced in the circuit caused by the accumulation of dirt and corrosion.

A-C Tone Tester.

Certain kinds of trouble which arise in switchboards do not cause excess transmission losses that can be quantitatively measured. The most common trouble of this type is due to cutouts and opens which may be caused by dirty or loose connections and improper key and relay adjustments. While not causing a definite value of excess loss, this class of trouble affects the transmission adversely and in many instances is more serious and annoying than fixed excess losses. These troubles are included under the Class A group. A good portion of the troubles pictured in Fig. 2 as Class A were of this nature.

It is possible to construct a simple testing set for detecting these troubles in switchboard circuits at a slight cost. The set utilizes an ordinary telephone receiver which for testing purposes is one of the most sensitive direct reading devices known. A telephone receiver will give a sensible indication with a current less than one-millionth of an ampere.

The testing instrument proper is light, strong and stable in operation. The routine method of using it is simple, and skill in handling the set is acquired with little practice. To a person skilled in handling the set, the indications of trouble are clear, positive and accurate.

The circuit which has been developed by the writer is shown in Fig. 4. The equipment in this circuit can be conveniently assembled in a suitably-sized wooden box. The bottom of the box should be made so that it will straddle the keys and thus make possible using it directly at the switchboard. The buzzer is enclosed in a sound-proof packing so as not to interfere with the tone in the receiver.

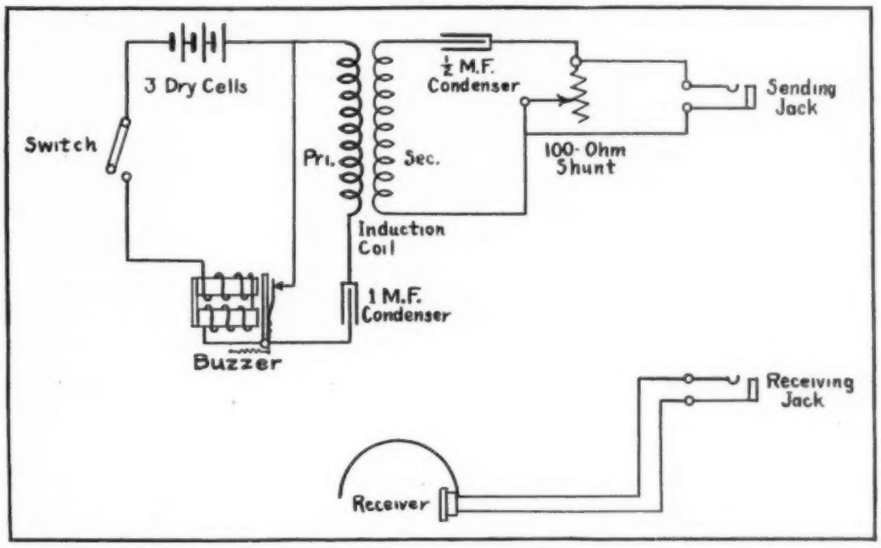

Fig. 4. This Alternating Current Tester Is Being Successfully Used to Detect a Large Number of Faults Which Cause Poor Transmission.

The test set can be easily and cheaply made from material and parts which are usually available around the exchange. The set, as shown is being successfully used to detect cutouts, noisy cords, undersized plugs, dirty plugs, bent plugs, poorly-adjusted, dirty and corroded key and relay contacts, where such affect the talking feature of a connection in exchange and P. B. X. switchboards.

The test set is used by inserting the plugs of one switchboard cord circuit into the two jacks of the test box. When this is done, a tone is heard, the volume of which is controlled by an ordinary rheostat shunted across the output terminals. Ordinarily a tester can note by shaking the cords, turning the plug in the jacks, jarring the key shelf and otherwise disturbing the cord circuit under observation, any noisy, scratchy, high resistance contacts or cutout conditions.

Although a telephone system may be carefully planned and installed and at first give satisfactory service, such service will not be continued unless adequate means are adopted for the efficient maintenance of the system. The manufacturers do not guarantee that the telephone plant will function without proper maintenance. On the contrary, they do guarantee that it will not function unless a proper maintenance system is followed.

Not only should the system be inspected for obvious defects, such as broken insulators, tree grounds, decayed poles, etc., and these remedied, but suitable tests should be made frequently to locate troubles detrimental to transmission which are not so obvious. These tests and inspections should include line insulation tests, tests of dry cells and central office batteries, and also sufficient transmission measurements to insure the desired results and the maintenance of the grades of service required.

Relation of Tributary to Toll Center

Toll Center and Tributary Relationships Should Be Made Pleasant—Personal Acquaintance of Chief Operator and Operators at Both Offices Helpful—Advantage of C. L. R. Method—Paper From Traffic Meeting of Ohio Convention

By Mrs. Grace Peltier,

Traveling Chief Operator, The Northern Ohio Telephone Co., Bellevue, Ohio

The relationship between tributary and toll center is a subject covering a large territory and worthy of consideration. This relationship can be made very pleasant, or very unpleasant, not only to operators, but to subscribers as well, by the attitude of toll center and tributary operators toward one another.

First, let us endeavor to define the duties of both tributary and toll center. The work of tributary operator is to record all calls from her subscribers and pass them to the toll center, "T. X.," whose duty it is to establish and supervise the connection and time the calls for tributary office.

As the toll traffic of tributary offices does not warrant the building and maintenance of circuits to many points, the tributary operator is required to use those of her toll center. We are taught from the very beginning that the one most important objective of toll operating is to save circuit time. This can be helped materially by the tributary operator.

Pointers for Tributary Operator.

One may ask: "How can we help in saving circuit time?"

The answer is: Record all your calls accurately, obtaining from your subscriber all information necessary to complete the connection before you attempt to pass the call to the toll center.

The class of service—whether station-to-station or person-to-person—seems to be the bone of contention between tributary and toll center operators. Question your subscriber before you release him if you are in doubt concerning the class of service desired. It is much easier to say, when recording the call, "Do you wish to make this a person-to-person or station-to-station call?" than it is to try to convince your subscriber at collection time that he is not being charged an exorbitant rate.

Answer all signals as promptly as you would wish to be answered, and be ready to ring your subscriber as soon as requested by the toll center operator. If a tributary operator cooperates in all of these things, I am sure this relationship can be very pleasant.

The toll center operator also has her various duties to perform in order to give the tributary subscriber the service for which he is paying. Record the calls correctly, and handle them with your own calls according to filing or precedence time. This is the only fair thing to do in regard to your tributary calls, as the service you render to your tributaries reflects not only on the tributary operator, but upon you as well.

We have one chief operator who makes speed tests both on her own calls and those of her tributary offices; and the average speed for the tributary is never over two minutes and more often less. Giving reports at proper intervals and keeping the tributary operator posted of any delay will eliminate a great deal of misunderstanding.

Tributary Offices Are Patrons.

A toll center operator should remember that a tributary is entirely dependent upon her for service, and that she must be fair, square and prompt in rendering that service. Are not our tributary offices our patrons, and isn't it just as important to render them good service and courteous treatment as one of our own subscribers?

We have offices called partial tributaries, only a part of whose traffic is ticketed and timed by the toll center. In an office of this kind, if calls handled by the tributary are completed and calls handled by the toll center are unnecessarily delayed, a lot of unfair criticism is brought upon the operator from her subscribers.

We all know that a call handled by the two-ticket method is much slower than one handled by the single-ticket method, but if one or two-minute service is given on one call, and 10 or 15 minutes taken on another, the service is not rendered satisfactorily from the standpoint of the subscriber.

About two weeks ago I visited two offices that are tributaries of the same toll center and both partial tributaries. I observed that on almost all the calls passed to the toll center there was a decided delay before reports were given; in most instances the tributary operator had to ask for an *AG* before she received any report.

Service to Tributaries.

In making a speed of service test on the day's business from each office, I found an average of 13.5 and 10.7 minutes on calls handled by the toll center. In making the same report on calls handled by the tributaries I obtained an average of 1.9 and 2.1 minutes. Service of this kind is not fair to the tributaries and does not tend to strengthen the relationship between tributary and toll center.

One of the chief causes of dissension between tributary and toll center operators is the quoting of time and charges. As there is no supervision received on calls of this kind, careful supervision should be given to the timing of calls from a tributary. A tributary operator can also assist in this by ringing back to the toll center if the operator does not challenge at the finish of the conversation.

Make sure that you have the correct rate before quoting the time and charges to the tributary. Can you blame a tributary for doubting you at times if you are in the habit of quoting incorrect charges?

The relationship between tributary and toll center can be greatly improved by personal acquaintance of chief operators and operators at both offices. How many of the chief operators ever visited their tributary offices to see for themselves the conditions under which the other operators are working? In our company we encourage our chief operators to visit the tributaries, for in this way they can observe the service their own office renders to the tributaries.

Getting Acquainted with Tributaries.

About every two months I visit nine offices which are not owned by our company but which are tributaries to our various exchanges, to check their toll traffic reports. On these visits I usually take the toll center chief operator with me. This enables us to iron out a great many misunderstandings and also creates a friendly feeling between the tributary and toll center operators, inasmuch as they do not hesitate to call one another when difficulties arise. Chief operators, try it; there may be a surprise for you around the corner.

We also have classes, inviting the tributary offices to the toll center for a day—or, if they are not too widely separated, for an evening. At these meetings the problems of the various offices are discussed, and through this personal contact matters can be settled satisfactorily. Many misunderstandings can be eliminated by explaining the equipment in your office to the tributary operators, or explaining to them the necessary procedure followed.

In these meetings we give to all operators the standard methods of operating, so that the tributary operator understands them as well as the toll center. After the business session we serve luncheon and have some form of entertainment. In this manner everyone becomes well acquainted. We have found that the amount necessarily spent to make these meetings a suc-

cess has more than paid for itself in the services rendered and the cooperation attained.

In my work I have found that the operators in the smaller exchanges are eager to learn the standard methods of operating; and after they have learned them they endeavor to utilize them to the best of their ability. Many small offices do not have the opportunity to learn the operating methods given to us, so why not try and help them? On the other hand, when a tributary operator is being informed of something she has done incorrectly, she should not take the attitude that the operator is trying to run her office, but take it as constructive criticism.

As the commodity we are selling is service, why not make the quality of this service standard in the smaller exchanges as well as in the larger? The relationship of tributary and toll center can be made one of profit through personal contact of chief operators and other operators. Try it. I am certain that you will find fewer problems where courtesy, cooperation and personal understanding exist.

In our contact each day with people of the business world we have come to realize that the aim in all business transactions is speed in completion. Several years ago, a business man would sit for several hours waiting for a train and be very contented. But now, let him miss one section of a revolving door, and his disposition is ruined for the rest of the day. The same applies to telephone work. Formerly a subscriber did not expect a report for an hour or so; now, one or two-minute service is required, and anything over that is not satisfactory from the standpoint of the subscriber.

During the last few years rapid strides have been made in the telephone field to accomplish speed in completion of toll calls. A decided improvement was made when the two-ticket method was changed to single-ticket method. This eventually was improved by the introduction of the C. L. R. method, which means "Combined Line and Recording." By this method the ticket is recorded and connection established while the subscriber remains at the telephone.

There are several advantages of C. L. R. method over those used in former years. The first one is obvious—improvement in speed of service. That speed in completion has been accomplished since the adoption of C. L. R. is shown by the marked improvement made in offices using this method. An average speed of 1.2 to 1.5 minutes is now given, as compared to five and six minutes before using C. L. R.

Credit for the large increase of toll business during the past year may be given to C. L. R., for since the adoption of this method the increase in toll calls has been very noticeable. For the months of January, February and March of this year, our records show an increase of 20,937 calls over the same period of last year. Of this amount, 20,648 messages, or an average of 98.5 per cent, were completed.

The ability to complete a larger per cent of our toll messages has been an inducement to our patrons to use long distance service. In placing a call, a subscriber has just one object in mind—communication with the party he is calling. A cancelled call does not represent a satisfied subscriber, although we may have used every possible means to complete his call.

That there are more satisfied patrons is shown by the larger per cent of completion in every office. Where the per cent completed was around 90 before using C. L. R., we now find an average of 92 and 94 per cent, and some offices have still higher percentages.

Our records show that the percentage completed in 1927 was 91.9. This was before using the C. L. R. In 1928 we began using this method in some of our offices, and our per cent completed was 92.9 for that year. By using C. L. R. in all our exchanges now, our average for 1929, to date, is 94.1 per cent completed.

Another advantage of C. L. R. over other methods is that the increase in traffic has not required the building of additional toll circuits. Wherever traffic has warranted it, alternate circuits have been provided to given points. As alternate routes are to be used immediately, if the first route is *NC*, much time is saved by the operator being able to give non-hang up service.

The circuit time saved by completing our calls C. L. R. has been so great that we seldom have our calls delayed by congested toll circuits. We also find that the large increase in toll traffic has not required additional operators, but in most cases it is handled by less operators.

When the C. L. R. method was first introduced, the exchanges using it were only able to complete about 50 per cent of their calls in this manner. But as improvements are being made in this practice we find about 90 per cent of calls are being completed with the subscriber not hanging up. This has been helped materially by the subscriber who, on seeing the benefit he derived from it, now requests this service.

By using C. L. R. according to the fundamental principles and on as many calls as possible we should be able to increase our toll traffic at least 25 per cent and have a larger per cent of satisfied toll users.

As the results we obtained from our work depend entirely upon the amount of thought, time and heartfelt interest we put into it, why not all unite in serving the public to the best of our ability?

Adopting and using conscientiously all the newer methods of operating as they are brought to us, and building a bridge of cooperation between tributary and toll center, can only accomplish one thing—giving to the public quick, reliable and courteous service.

The Index for Volume 97 of "Telephony."

The index for Vol. 97 of "Telephony," which was completed with the issue of December 28, 1929, is now ready for distribution among those who keep complete files.

In this index are listed all of the important articles which appeared between July 6 and December 28. It will be supplied free of charge to those making application.

Pennsylvania State Police's Statewide Telephone Typewriter.

The Pennsylvania state police department has adopted the telephone typewriter on an extensive scale. Approximately 100 Pennsylvania communities will be equipped with these machines for the instantaneous dissemination of police information. The system is expected to facilitate the capture of criminals and to aid in the suppression of crime, as it makes possible the broadcasting of the details of a crime to all important points in Pennsylvania within a few minutes after it has been committed.

Division headquarters will be established at Pittsburgh, Harrisburg, Philadelphia, and Wyoming, in Luzerne county. Both receiving and sending machines will be placed at these points.

From these sectional headquarters, information will be flashed over the system to other cities and towns, which will be equipped with receiving instruments only. The outlying stations will be placed in state or municipal police quarters, or some other advantageous point, and will be strategically located with regard to the main highways.

At Harrisburg, which is to be the main headquarters for the entire state, and at the three other zone headquarters, experts will be maintained to operate the telephone typewriters. Switchboards and other equipment will be installed at zone headquarters so that messages may be dispatched to one city only, if desired. The equipment, however, will permit the sending of the same information to all stations, at the same time, at the rate of 40 words per minute.

Police in communities served by receiving machines only, such as Erie and Cory, which are two of the 40 western Pennsylvania cities so equipped, will telephone to zone headquarters the messages they wish to be flashed over the system.

The equipment was installed in the Erie and Cory police stations by the Mutual Telephone Co. Upon the completion of the installation work the system was to be subjected to a series of thorough tests before the service is formally inaugurated. This, it was expected, would be the first week of the new year.

Here and There in Telephone Work

The Magneto Exchange Repairman—Switchboard Trouble.

By John A. Bracken

The reliability of the magneto switchboard is principally dependent upon its design, manufacture and installation, and then its upkeep or maintenance. Like other electro-mechanical devices consisting of movable parts and being subject to more or less wear and tear, these component parts develop faults or trouble of various kinds, some of which affect an individual subscriber's line only, while others affect all subscribers more or less.

An open drop coil, for example, a drop out of adjustment, loose connection on a drop or a jack, or badly-worn contact springs on the jack, would affect a certain subscriber directly, whereas defective connecting cords or plugs, trouble in the ringing circuit, or a fault in the operator's telephone circuit, would affect all subscribers of the exchange. Such failures of the switchboard necessitates readjustments, repairing or replacing of the apparatus affected.

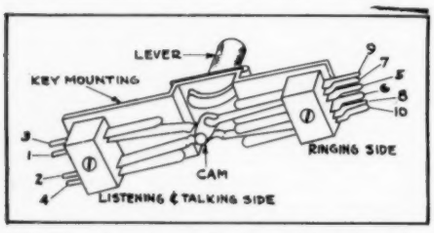

Fig. 1. Combined Ringing and Listening Switchboard Key Common to a Single Cord Circuit.

From this it is evident that the dependability of the switchboard cannot always be absolute, and that the degree of dependability is directly dependent upon the reliability with which it normally functions, upon the care with which it is inspected and tested, and upon the promptness and thoroughness with which it is restored to normal operating efficiency.

In maintaining a magneto switchboard, there isn't anything more necessary than a thorough acquaintance with the operating principles and actual circuit wiring of the equipment. As experience is one of the best guides in discovering, locating and removing any trouble in the board only general suggestions will be given here.

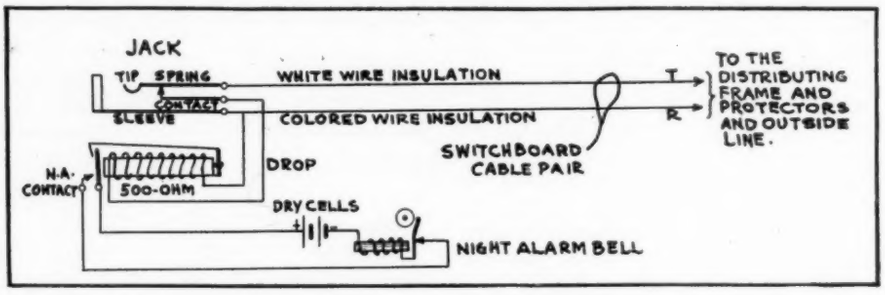

Fig. 3. Details of a Jack, Drop and Night Alarm Circuit.

The first principle in correcting trouble in the switchboard is to localize it by disconnecting component parts of the circuit being tested, after thorough tests have been made at each step. The greatest amount of trouble usually develops in the connecting cords and cord plugs, as these are subjected to the greatest usage and, therefore, most liable to wear and tear.

Next to the cords, the listening and ringing keys and the line jacks will require the most attention. There are many types of magneto switchboard key and cord circuit arrangements, some of which are so designed that it is possible to ring on each cord separately, and others arranged to ring on a single cord only. Fig. 1 represents a combined ringing and listening key common to a single cord circuit and is described as follows:

Two groups of contact springs are shown, one of four and one of six. Two springs of each group are longer than the other and are called the swinging springs. They are shaped so as to rest against a cam placed between the two sets of springs. If the key lever be moved in one direction, the swinging springs, 1 and 2, will be moved outward by the cam into contact with the springs 3 and 4.

Springs 5 and 6, called the inner springs, are normally resting against the swinging springs, 7 and 8; and when the key lever is moved in the other direction, springs 7 and 8 are moved by the cam off the inner springs, 5 and 6, and forced into contact with the outer springs, 9 and 10.

The tip and sleeve contacts of one plug of the cord pair are connected to springs 1 and 2 respectively, and also to springs 7 and 8, as shown in Fig. 2. The tip and sleeve contacts of the other plug are connected to springs 5 and 6. With the key lever in its normal position, the circuit is continuous from the tip of one plug through springs 1, 7, and 5, then to the tip of the other plug. The circuit of the sleeve strand of the cord circuit is likewise closed through springs 2, 8, and 6, in a smiliar manner.

The operator's telephone set is connected to springs 3 and 4. With the lever operated in the listening and talking position, the operator's telephone will be seen to be connected across the circuit of the two cords through springs 1, 3, 7, and 5, and 2, 4, 8, and 6, and then to the subscribers' lines in whose jacks the cord plugs are inserted.

Springs 9 and 10 are connected to the alternating current ringing power circuit, so that with the lever in the ringing position, the tip and sleeve of one cord will be connected through springs 7 and 9 and 8 and 10 to the source of ringing power, while the connections between the two cords will be broken at springs 5 and 6.

By tracing out the path of the ringing current (Fig. 2) to the calling cord when the lever is in the ringing position, it will be seen that the ringing current cannot flow through the operator's telephone because that part of the key circuit is disconnected at springs 1 and 2.

When a connection is established between two stations through a cord pair, the listening key is placed in its normal position. Listening on the connection would affect the transmission between the parties because of the low impedance of the operator's receiver and the secondary winding of the switchboard induction coil. The clearing-out drop, which is connected permanently across the tip and sleeve of the cord circuit, will not noticeably reduce the transmission because of its high impedance.

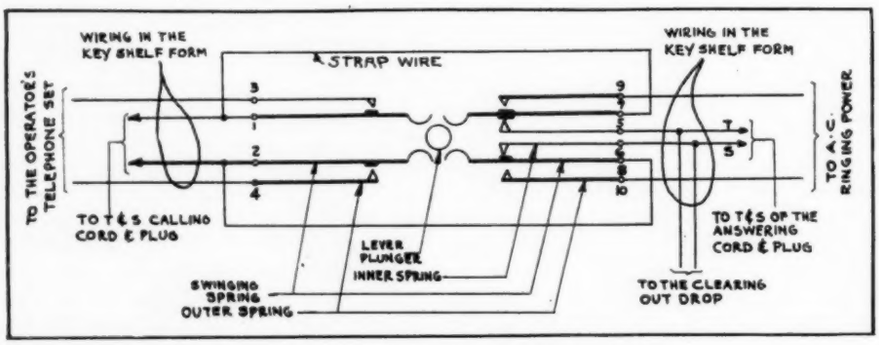
WIRING IN THE KEY SHELF FORM
STRAP WIRE
WIRING IN THE KEY SHELF FORM
TO THE OPERATOR'S TELEPHONE SET
TO A.C. RINGING POWER
TO T & S CALLING CORD & PLUG
TO T & S OF THE ANSWERING CORD & PLUG
LEVER PLUNGER INNER SPRING
SWINGING SPRING OUTER SPRING
TO THE CLEARING OUT DROP

Fig. 2. Details of the Switchboard Key Wiring.

The total opposition offered to the flow of electricity through an alternating current circuit, is called impedance. This total opposition is due to the combined effect of ohmic resistance and reactance; that is, considering that the clearing-out drop, induction coil, and receiver are inductively wound on a core of iron, the tendency of inductance is to oppose the flow of the current in an alternating current circuit, which tendency is the result of the counter E. M. F. that is set up.

This opposition to the flow of current is called inductive reactance and may be considered as an additional resistance. The opposition offered by reactance, however, is different from that offered by ohmic resistance, the reactance opposition being due to the counter E. M. F.

The path of the alternating voice currents between the two parties through the cord circuit (Fig. 2) can easily be traced from the calling cord and plug to the swinging spring terminals, 1 and 2, to the swinging spring terminals, 7 and 8, through the springs and contacts to the inner spring contacts and springs to terminals, 5 and 6, to the tip and sleeve of the answering cord and plug.

Fig. 3 represents the connection of a jack, drop and night alarm circuit.

New System Placed in Operation at Orange City, Iowa.

The Central West Public Service Co. recently installed a new telephone system at Orange City, Iowa, the cut-over of 900 telephones taking place on Saturday, December 14. The common battery equipment was installed by Stromberg-Carlson Telephone Mfg. Co.

The opening of the new telephone office took place on December 23, and was well attended. Frank Milhollan, Omaha, Neb., president of the Central West company, J. T. Lynch, Sac City, Iowa, district manager, and Wm. V. Hansen, local manager, were present at the "open house."

Company Employes at Pomona (Calif.) Enjoy Christmas Party.

Employes of the Pomona Valley Telephone & Telegraph Union, Pomona, Calif., with their families, totaling 185, enjoyed their annual Christmas dinner and celebration on Friday night, December 20.

Following a turkey dinner, declared to be one of the best ever prepared, the crowd adjourned, to the auditorium, which was attractively decorated with two large Christmas trees heavily laden with toys for the children.

After a number of Christmas carol selections on electrolas were heard, a children's program, sponsored by Miss Maude Hitt, was given.

Reminiscences of the company's past history were given, and service awards, in the form of gold pins engraved with the number of years of service with the company, were presented to six people who were working with the company 25 years ago. They are Charles Laing, Miss Regina Illg, Ernest Irwin, George Parker and Mr. and Mrs. Carl H. Lorbeer. Mr. Lorbeer is manager of the company.

Presentation was also made to a number of employes having served the company for over five years.

At the conclusion of the presentation, Mr. Irwin, representing the general offices of the Associated Telephone Co., Ltd., spoke a few words of greeting and said the new organization offers greater opportunities for advancement. Following his talk there was a musical number by Mr. Verne and Robert Crane.

Transatlantic Telephone Carries Christmas Greetings.

A "Merry Christmas" from Mexico sped across land and sea last week to Madrid, Spain; Winnipeg talked to Ormskirk, England, and San Francisco wished London the joys of the season during a 24-hour period on Christmas Day in which transatlantic telephone traffic exceeded the normal daily average by 300 per cent.

Officials of the American Telephone & Telegraph Co. reported that subscribers in America had taken advantage of the holiday to "ring up" Europe and wish friends and relatives from Iberia to Scotland Christmas cheer. Christmas was the only day which exceeded the average in the number of the calls, it was said, and the rest of the pre-holiday period was characterized as "very normal." The Yuletide calls "about equaled" the number last year.

Wooden Directory Shelf for Public Pay Telephone Stations.

A very handy device that is appreciated by many telephone users is the wooden directory shelf now being used by the Pacific Telephone & Telegraph Co. on pay station booths.

The shelf holds the telephone book fast and in such a manner that the person referring to it may easily turn the pages with one hand leaving the other hand for holding packages or baggage. Directly above the shelf is an electric light directing its rays upon the directory.

"Wonder Whys" of an Observing Traveling Telephone Engineer.

By Ray Blain.

I wonder why some telephone companies call the place in which they keep material and equipment a storeroom, for in reality, and in plain words, it is just a junk pile. Now I am not saying that every progressive telephone company should not have a good storeroom, as I have seen some mighty fine ones.

I like to see well-labeled bins and shelves, with spare parts and material neatly stacked in them so that they can be found with little effort. Each bin tag should have the number of pieces that the bin contains; and when any is added or taken away, the proper notation should be made on the tag. I prefer the steel shelving, and it can be purchased at a cost cheaper than suitable wooden bins can possibly be constructed.

Telephones should be thoroughly overhauled and cleaned when removed from service, and wrapped up so that they will still be in good condition when required for reuse.

In contrast to this shipshape storeroom is the one that can rightfully be called a junk pile, for everything is piled around on the floor, or in any bin that might be handy, regardless of what the bin is intended for. I have found a bin to contain insulators, nails, screws, brackets, telephone parts and complete instruments. Needless to say, the outside plant of this particular exchange was in no better condition than was the storeroom.

Shelf Attached to Telephone Booth, Which Facilitates Use of Directory.

A good storeroom is a necessary part of every telephone exchange and the required effort to keep them in order will pay big dividends. It is the nature of most telephone equipment that if not properly stored it will depreciate rapidly.

Storerooms in the Philippines are called "Bodegas" and in the English sections of China "Godowns," even though some are upstairs. I also found one in the rear of a telephone exchange in Nagasaki, Japan, but could not spell, much less pronounce or remember it.

But regardless of how it is spelled or pronounced in any language, it is either a storeroom or a junk pile; and the former should be the aim of all well-governed telephone companies.

Construction Plans of Bell Companies

1930 Plans of Companies in Different Parts of Country Indicate Good Condition as Larger Expenditures for Improvements in Buildings and Plants Are Included in the Programs—Growth of Companies During the Past Few Years

Growth of Canadian Bell; Extension and Construction Plans.

The Bell Telephone Co. of Canada continues to maintain its steady growth and progress, and gross revenues in 1929 will set another record, it is stated. Summer business was up to expectations, with the new long distance facilities liberally patronized. New telephone installations during last year exceeded estimates and net gain will probably be slightly below 50,000 for the year. Toll business in 1928 increased $1,018,069, and at least an equal increase last year is likely. Completion of the $7,000,000 long-distance extension program of the company last year was nearly effected. This program, the largest the Bell company of Canada has ever attempted, provided a total of 250 additional lines which added over 15,000 circuit miles to existing long distance facilities.

Last month a 24-hour service direct between Montreal and Chicago was inaugurated; also five new circuits between Toronto and Montreal; one new circuit to St. John, N. B., and two additional circuits between Montreal and Quebec.

Six lines have been added to provide further talking facilities between Montreal and New York, Philadelphia, Boston and other eastern United States cities.

Since the present operating organization of the Bell Telephone Co. of Canada was established seven years ago, the investment in telephone plants has grown, it is stated, from $69,839,000 to $144,000,000, an increase of 106.2 per cent; the number of telephone stations has increased from 458,000 to 739,000, or 61.4 per cent; annual additions to plants, from $12,221,000 in 1923 to $29,000,000 in 1929, an increase of 137.3 per cent, and the number of employes from 12,700 to 19,200, an increase in personnel from 1923 to 1929 of 61.2 per cent.

The number of telephones throughout Canada per 100 persons has increased from 5 in 1912 to 13.2 at the present time, according to government statistics.

Indiana Bell Announces Increased Improvement Program for 1930.

Proposed expenditure of $6,606,000 for improvement of properties owned by the Indiana Bell Telephone Co. in Indiana has been announced by C. H. Rottger, president of the company. Of this amount, $1,401,000 represents an increase over the improvement budget for 1929.

The announcement was made by President Rottger following the request of President Hoover that all public officials and industries do all improvement work possible at this time to increase employment. The statement follows:

"The Indiana Bell Telephone Co. now plans to make gross additions to its property accounts in Indiana during 1930 amounting to $6,606,000, an increase of more than a million dollars over the 1929 budget. This is part of a five-year program which involves gross additions of $31,887,000 from 1930 to 1934 inclusive.

Our 1930 budget of almost $6,700,000 includes more than three-quarters of a million dollars that we propose to spend on additions to our building and lands accounts and more than 1½ millions to be added in central office equipment. A total of $1,163,000 will be added to our toll line equipment and property. Included in this are several additions to our long distance toll cable system. A large part of the remainder of our 1930 program will be additions to and betterments of our outside exchange plant.

Our 1930 program represents a material increase over our 1929 program which, in turn, was very substantially greater than the programs of prior years. It is the result of a careful analysis of the business outlook for the future and represents our best judgment of what the demand will be upon us for additional telephone service.

We have every confidence in the industrial future of Indiana and the recent happenings in the stock market in no way have changed our opinion. We will go ahead actively to put our 1930 program into effect."

Construction Expenditures in 1930 of C. & P. Company.

Planning a total expenditure of more than $22,000,000 in 1930 for new telephone construction in Maryland, District of Columbia, Virginia and West Virginia, the cost of this expansion program by the Chesapeake & Potomac Telephone companies will exceed expenditures for the past year in the same territory by approximately $6,000,000, according to Lloyd B. Wilson, president, Washington, D. C.

Of the total, it is estimated that $8,000,000 will be expended in Maryland during this year; $3,500,000 in the District of Columbia; $6,200,000 in Virginia and $4,450,000 in West Virginia. Facilities to be provided will include buildings, central office apparatus, local and inter-city telephone lines and other equipment.

These expenditures are a part of a five-year program of expansion, under which the companies plan to expend $100,000,000, including $12,000,000 for land and buildings, $22,500,000 for central office equipment and $10,500,000 for inter-city toll lines and cables, much of the outlay in the last item involving the installation of the toll line system in cables to safeguard inter-city service.

Southern Bell Plans Expenditure of 35 Millions This Year.

The Southern Bell Telephone & Telegraph Co. plans to spend $35,000,000 in the Southeast this year, President Ben S. Read has announced. This amount will be expended for additions and replacements to meet the demand for service in the states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee.

Details of the expenditures to be made in each of the states have not been completed, Mr. Read said, "but the company expects to meet every demand for service and to continue the expansion necessary to provide for the future telephone needs of the Southeastern states."

It is estimated that 50,000 telephones will be added in 1930, or about the same number as added last year.

Big 1930 Construction Plans of Pacific Bell Company.

New telephone construction on the Pacific Coast in 1930 will cost nearly $7,500 an hour, or a total of over $65,000,000 compared with nearly $7,000 an hour in 1929. This increase, said H. D. Pillsbury president of the Pacific Telephone & Telegraph Co. is the company's answer to President Hoover's prosperity budget plan. Both the 1930 expenditures and the planned expenditure of $333,000,000 in the next five years break all records for new telephone construction, and parallel Pacific Coast growth.

The company's new long distance network on the Pacific Coast will cost $100,000,000 in the next five years and will increase wire capacity 2,000 per cent in most cases. Over $20,000,000 will be put into land and new buildings.

Of the $65,000,000 construction budget for 1930, over $27,000,000 will be spent in northern California and Nevada, about $16,000,000 in Washington, Oregon, and western Idaho; and about $22,000,000 in Southern California.

During the coming five years the $333,000,000 construction budget will be spent as follows: In Northern California and Nevada $149,000,000; in Washington, Oregon and western Idaho, $85,000,000; in Southern California, $99,000,000.

Land and buildings in Northern California and Nevada in the next five years

will cost $8,700,000. This includes 82 new buildings. In Washington, Oregon and western Idaho, land and new buildings in the five-year period will cost $8,000,000. In Southern California the company will spend $4,000,000 for land and new buildings.

The long distance network includes the Canada to Mexico cable costing $30,000,000. The cable will be 1,500 miles in length, longer than any now in existence in the world.

The balance of the $100,000,000 long distance budget will pay for thousands of miles of network all over the coast. It will also pay for five new transcontiental routes. With three routes now in use, the company will have eight transcontinental routes available for Pacific Coast business after five years.

In Northern California, the two largest cable projects are those from San Francisco to Wendover, Utah, 630 miles, and from San Francisco to Los Angeles. The San Francisco-Los Angeles cable will be finished in 1930.

Southwestern Bell's New Telephone Building at San Antonio.

Specifications for the new administration and equipment building of the Southwestern Bell Telephone Co. in San Antonio, Texas, have been sent to contractors for making bids. The building is part of a $5,000,000 expansion program of the company in that city. The structure will cost approximately 2½ million dollars. This figure includes the newest type of dial equipment which will be installed to care for the traffic from the downtown business area.

Specifications for the first unit of the new telephone building call for an eight-story structure with a basement and sub-basement. It will be 156 feet high, including the penthouses on the roof, and will be more than equivalent to an ordinary 10-story building. This will be the first unit of an ultimate building of 21 floors. It will be built of brick and terra cotta in the modified Spanish style of architecture. The building will be ready for occupancy on January 1, 1931.

The arrangement of the local business office on the main floor will follow modern trends in that it will be a counterless office. Part of this floor will house the power plant for telephone equipment and the balance will be available for rental purposes.

On the second floor will be the division offices for the commercial department, additional power plant for telephone equipment, and the local testing bureau. Floors three and four will house all of the new dial equipment for the downtown area, and the fifth floor will be divided between the telegraph equipment and the division offices for the traffic and plant departments.

Toll terminal equipment will occupy the entire sixth floor, while the operators' quarters, composed of a restroom and cafe, will occupy most of the seventh floor. The eighth floor will accommodate the long distance switchboard, the information bureau and the division offices for the accounting department. From this floor the accounting, auditing and billing for approximately 70,000 subscribers in southwest Texas will be handled.

Above the eighth floor will be two penthouses containing the elevator machinery, ventilation fans, and water tanks. The heating plant, storeroom and other building machinery will be located in the basement and sub-basement.

Oklahoma Company Announces Large Construction Program.

Counties in northwestern Oklahoma are to receive $2,000,000 in improvements of telephone properties during 1930 to be made by the Standard Telephone Co. The money is to be expended in Harper, Ellis, Woods and Roger Mills counties.

The plans include rebuilding of all toll lines, most rural and city lines, installation of new switchboards and office equipment. New exchange buildings of brick and tile will be erected in Laverne and Buffalo.

Work was expected to start at Buffalo on January 2 and at Laverne upon completion of the Buffalo improvements. Buffalo will be made a toll center of the company with seven direct toll lines to Woodward. Announcement of improvements was made by company officials following a recent meeting at Buffalo.

Plans Expenditure of $44,000,000 in Pennsylvania This Year.

Leonard H. Kinnard, president of the Bell Telephone Co. of Pennsylvania, has announced that the company plans to spend $44,000,000 on construction projects in Pennsylvania this year.

This is $10,000,000 more, the announcement said, than the company had planned to spend before President Hoover began his move for the stimulation of business. The program includes new buildings, new central office equipment and new local and toll lines.

"Not only does our new 1930 budget for the state exceed by $10,000,000 the earlier estimate for construction expenditures this year, but our plans call for a $215,000,000 telephone expansion program during the next five years," said Mr. Kinnard. "This new five-year construction budget exceeds by $50,000,000 the appropriation tentatively decided upon for this period when we considered the subject about a year ago.

Philadelphia's telephone plant, during this five-year period, will be improved with new constructions costing more than $64,000,000. The Philadelphia program for 1930 devotes a considerable portion of the $12,000,000 appropriation to new buildings and to the extension of the subway conduit network for cables.

Telephone engineers estimate that about 29,000 telephones will be added to the Bell network in Philadelphia this year. This will raise the city's total of Bell telephones well beyond the 400,000 mark.

Throughout the state, the improvement of equipment outside of the central offices will cost approximately $16,200,000. Much of this sum will be devoted to the construction of underground and storm-proof aerial cable. Within the year, $685,000 miles of wire in storm-proof cable are scheduled for construction under the company's 1930 budget.

The extension program is based upon an estimated growth of 78,000 telephones in the state. Engineers in arriving at this net figure predict that approximately 336,000 telephones will be installed and that 258,000 will be disconnected because of the removal of subscribers to other neighborhoods, and other causes.

Southern New England Company Announces Large 1930 Budget.

Projected expenditures of $13,800,000 for plant expansion and improvements in 1930 announced recently by H. C. Knight, vice-president, in a statement for the Southern New England Telephone Co.

Of the total, $1,379,000 will be spent in the New Haven exchange area. Further appropriations of $68,000,000 during the next five years were forecast by Mr. Knight, the money to be spent for new buildings in many Connecticut cities and in various plant improvements.

Ohio Bell Announces Big Five-Year Construction Budget.

The Ohio Bell Telephone Co. announces that it is planning to spend $167,400,000 in Ohio in the five-year period from 1930 to 1934 inclusive. Of this amount, $28,500,000 will be spent the first year.

E. F. Carter, president of the company, who made the announcement, said that "every community in Ohio Bell territory will receive its share of the work."

The amount does not include operation and maintenance costs, which themselves run into many millions of dollars, but will be used entirely for the addition of new plants and the improvement of existing facilities.

Wisconsin Telephone Co. to Spend $14,000,000 for Expansion.

The Wisconsin Telephone Co. expects to spend $14,000,000 for expansion this year, or $3,000,000 more than in 1929, William R. McGovern, president, announced on December 27. A large amount will be spent for dial equipment in most of Milwaukee's exchanges.

Large additions to central offices are

planned in Madison, Fond du Lac, Superior, Green Bay, Neenah, Menasha, Racine, Janesville, Oshkosh and Milwaukee.

The company now serves 385,700 subscribers in Wisconsin and interconnects with $206,100 additional stations in the territory it serves.

Michigan Bell Company Plans Largest Construction Program.

The Michigan Bell Telephone Co. will spend approximately $32,000,000 on plant expansion in the state during 1930, the largest program the company has ever undertaken, according to a recent announcement by President Burch Foraker, president. The amount to be expended is nearly $6,000,000 in excess of the 1929 program.

The money is to be spent on new construction only, and will be in addition to approximately $30,000,000 maintenance and operation expenses, including wages, making total expenditures by the company this year of more than $660,000,000, or an increase of about $8,000,000 over 1929.

The company has more than a dozen building projects under way now, with others planned. Those under way and to be completed in 1930 include new structures at Benton Harbor, Charlotte, Saginaw, Port Huron, Dearborn, Holland, Macatawa Park, Grand Rapids, Drayton Plains and four in Detroit. Several new long distance cable projects are in hand, and others will be added at many points. Every section of Michigan will be affected.

These projects not only will keep busy the large construction crews of the Michigan Bell company, but will provide work for a number of construction firms and many suppliers and their employes.

In the past three years, the company has expended $72,000,000 in expansion projects alone. In that time it has erected 25 new buildings and major additions throughout the state.

IF WISHES WERE HORSES

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

A gay host of the Wish family started out together the first day of January, 1929, on a year's journey. They were all good wishes because I doubt whether the most hardened criminal would start out a bad wish on New Year's Day. Besides, what is the most hardened criminal but a whole lot of human nature weakened by selfishness resulting in sin?

Where is that great army of good Wishes now? Many have turned back in discouragement. Others have fallen by the wayside, too weak to overcome obstacles. Some have given up before fairly starting. A few, about one-third, will come victoriously through. Where would the world be if all came through? A hundred years of progress, at least, would be made. Why did they not all come through?

Many turned back in discouragement. Can you not see their wishers? What sort are they, anyway, who send out wishes into this great, busy world and do not go along and fight discouragements instead of sitting down with their heads between their hands and lamenting? No wonder their wishes came home to roost—poor, broken things! Others have fallen along the way, too weak to overcome obstacles. Here is the type, you know her kind:

"I thought you planned to do (so and so) this year?"

"Oh, yes, I did, and I got a fairly good start, but first one thing and another came up, and so I just let my good intention (wish) die a natural death. Maybe next year will be better."

Some have given up before fairly starting.

"What is your wish for 1930, Hettie?"

"I made a wish all right. But I don't see any chance of it going through, unless, perhaps, Mary Jones dies . . . Oh, well' (shrugs her shoulders).

Why have these wishers failed?

It is the easiest thing in the world to make a New Year's wish. But after one has made a resolve to see his wish realized, he has committed himself. And it is to his everlasting discredit if he does not keep company with his wish and put forth every effort to see it realized. But the reason so many wishes are never realized is that they never could be anything *but wishes*—such as wishing for the moon. How true the saying, "If wishes were horses, beggars could ride."

All of the wishes that do come victoriously through this year will be the ones made by people of the type of Emmy Lou, told in a story written by George Madden Martin.

Although Emmy Lou was a very poor speller she longed (wished) that she might some day win the silver medal given each year to the best speller. Much to the surprise of everybody she did win it.

When she came forward to receive it, her teacher told her she should have it attached to a blue ribbon. And then everyone received a second surprise when she replied, "I have it already," and opening a school book, she took, from the inside cover, where she had stored it at the beginning of the school term, a small package neatly wrapped in white tissue paper containing a yard and a quarter of blue ribbon.

MORAL: If you want your New Year's wish to come true, keep close enough to it to give it a boost when it needs a boost. As Roosevelt once said: "Let us pay with our bodies for our soul's desires."

Joins Mother and Son Separated by Continent and Ocean.

Stick-to-it-iveness always was a characteristic of A. C. Blumenthal, one time realtor extraordinary and host and entertainer without many peers in San Francisco, Calif., for the last two or three years a satellite of Broadway, New York, and now cutting a wide swath in London, which is a long way from his home in San Rafael, Calif.

A long time Mr. Blumenthal and his mother, Mrs. Barbara Blumenthal, lived at the Palace Hotel in San Francisco and to the casual eye they seemed inseparable—and they were, for the bond between Mr. Blumenthal and his mother was strong. So strong it was that not a week during his long residence in New York passed without a long distance telephone conversation with his mother who was still in San Francisco.

Early in November Mr. Blumenthal betook himself to London and his mother missed the weekly telephone talks. But on December 5 she received a cablegram from her son saying that on that very day he would call her on the telephone and resume their weekly talks. And he did.

In the afternoon Mrs. Blumenthal talked three minutes with her son and he promised he would call her every week while he was in London. Not in San Rafael nor in all California was there a prouder or happier mother than Mrs. Blumenthal.

Telephones in Moscow, Russia, Apartments; One to a Floor.

"One telephone and no more on a floor," is the edict of the Moscow Soviet, which is attempting to solve the telephone shortage by redistributing those in existence in Moscow among the greatest number of people.

The decree further instructs the telephone company to remove telephones from homes of private merchants, priests and other unsympathetic elements, even though they pay double the rental of proletarians.

Telephone News From Great Britain

London Chamber of Commerce Holds That Telephone and Telegraph Services Need a More Efficient Administration—Lord Wolmer Attacks Post Office at Meeting of London Commercial Club—Favor Independent Statutory Authority

By "TELEPHONY'S" Special London Correspondent

The high lights of the month have been two separate attacks on post office administration. They were (1) a resolution of the London Chamber of Commerce urging the government to appoint a committee of inquiry into the desirability of setting up an Independent statutory authority to administer the internal telephone and telegraph services of the post office; and (2) a further attack by Lord Wolmer.

Telephone Reform.

The Chamber of Commerce has for a long time held that the telephone and telegraph services need a more efficient administration. So far back as 1911, it suggested that a telephone authority should be constituted on the lines of the Port of London authority—responsible to but financially independent of the government. The need for inquiry, it is claimed, has now become more urgent, and the chamber considers that the time has arrived when the matter should be seriously considered.

Lord Wolmer Attacks Post Office.

Lord Wolmer, who was assistant postmaster general in the late Conservative government, returned to his attack upon post office administration at a meeting of the London Commercial Club on November 21.

Two months ago, he wrote for "The Times" a series of three articles, frankly critical, not of the personnel of the post office and telephone service—which he admits is the victim of the system—but of the system itself. In his more recent address he pointed out that the statistics and figures he had then published had not been, and could not be, challenged.

They demonstrated that the post office should be taken out of the hands of civil servants and politicians, and treated purely as a business proposition and public utility service. Our telegraph service, he asserted, had been throttled by inefficiency, and our telephone service was a disgrace to a great commercial country.

If our telephone service, for instance, had been developed as had that of the United States, or Sweden, or Germany, we could give increased employment in the telephones alone for thousands of men and women. More important still, an inadequate and inefficient telephone service handicapped us in our world competition in industry.

Among the greatest sufferers from stagnation of the services administered by the post office, were, he said, the staff that administered them. Men who had given all their lives in the service of the various branches found their abilities handicapped and their chances of promotion blocked.

A post office run on business lines could pay to the Exchequer for the monopoly a rent in excess of anything received over an average of years, and at the same time a better service could be given and bigger profits maintained. Lord Wolmer welcomed the action of the London Chamber of Commerce in demanding an inquiry into the subject, and expressed the belief that the time had come when our chambers of commerce should form themselves into an unofficial league for postal and telephone reform.

While opinions may, and in fact do, vary as to the propriety of an attack on the post office by a former assistant postmaster general, there is beyond all doubt a rapidly-growing volume of opinion favoring his suggestion that the telephone service, at any rate, should be taken out of civil service hands, and should be carried on as a public utility service run on business lines.

It is fully recognized that within the limited field to which they are confined by the fence of Treasury finance, both our telephone administrators and our telephone engineers are doing splendid work. It is, however, felt that their work would be immeasurably better if these burdens were removed—if legitimate business risks could be taken, and business methods of stimulating increase adopted.

At present, the only serious attempt at stimulating demand is being made not by the Post Office, whose efforts are negligible, and who, it would seem, find a certain amount of difficulty in satisfying a growing demand out of the limited capital permitted to it, but by an association representative of the manufacturing interests. The decision of the London Chamber of Commerce, therefore, to ask for an inquiry into the advisability of establishing a statutory authority to administer the telephone and telegraph services takes an added interest.

H. E. Powell-Jones, the secretary of the Telephone Development Association, in an interview, made it clear that his association would be well-disposed to such an inquiry, and that they would be willing to place before it the conclusions that they have arrived at after an exhaustive investigation of the question extending over several years.

London's Police Telephone Net.

London's new police "telephone net" was officially spread for the evil-doer on December 1. Only a few moments were required at the preliminary test to show the simple working of the telephone kiosks, hundreds of which will soon be dotted at about half-mile intervals throughout the 700 miles of the metropolitan area.

When the constable on his beat is wanted by headquarters, a red lamp glows on the top of the telephone box. High-speed police vans, within five minutes of receiving instructions, can reach any point in the metropolitan area, and the public can summon 20 officers to any spot in a few minutes.

During one of the busiest traffic hours, a police call was made to Richmond police station—2½ miles away. Rain was falling and the roads were both slippery and congested; but in 3½ minutes, a steel-lined police van—big enough to carry 20 officers and supplied with first-aid appliances and breakdown equipment—was on the spot.

A scheme is in contemplation for surrounding the London metropolitan police area with an outer ring to telephone boxes, independent of but in quick communication with it, with a view to the capture of motor bandits who may escape from the inside area. An inquiry is being made into suitable mechanical methods of barring the roads in these outside areas, to stop traffic quickly, so that arrests may be more easily effected.

Ship Telephone Service on River.

The River Tyne Improvement Commission recently completed arrangements with the post office authorities for telephonic communications between vessels using the coal staiths and subscribers on shore. The scheme is believed to be unique here, although on the Continent there are some excellent methods of controlling shipping at the large ports, radio being employed on some of the smaller boats, such as tugs.

Telephone wires are being laid from the North Shields exchange to each of the seven coaling staiths of the Tyne Improvement Commission. Each berth will have a separate telephone number, making it possible for subscribers to communicate with any vessel at any time during day or night. Portable instruments with the necessary length of cable will be provided and placed on board any ship requiring the use of the telephone, on its arrival at the staith, the portable telephone connection being removed immediately prior to the vessel leaving the berth.

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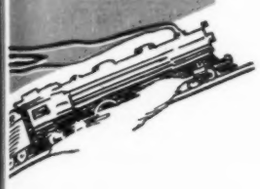

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Telephone News From Foreign Countries

Items From Countries of Europe and of South America Indicate That Growth in Telephones Is the General Trend—Improvements in Long Distance Equipment and Extensions Being Made in France, New Zealand and Colombia, S. A.

French Subscribers Almost Doubled in Past Nine Years.

Official statistics issued by the Administration of Post, Telegraphs and Telephones, for the year 1928 show that the number of telephone subscribers in France has not quite doubled since 1920, U. S. Trade Commissioner Louis Hall, Paris, reports. The progress shown is not considered as being remarkable in any way, and the total number of telephones now operating in France is still relatively low.

It may be said in general that the French public has not yet learned how to use the telephone to the best advantage. On the other hand, the notoriously poor service offered by the present equipment and administration of the telephone system in France certainly accounts for much of the public failure to appreciate the potential possibilities of the telephone.

The number of subscribers for the various French telephone districts is: Paris, 151,030; Lyon, 12,614; Marseilles, 11,710; Bordeaux, 8,458; Lille, 6,582; Strassbourg, 6,554; Nice, 4,781; Rouen, 3,674; Le Havre, 3,649; Nancy, 3,299; Nantes, 3,177; Toulouse, 2,882; Saint-Etienne, 2,559; Reims, 2,180; Dijon, 2,116; Limoges, 2,096; Tours, 1,957; Clarmont-Ferrand, 1,500; Orleans, 1,348.

Long Distance Lines Projected for Colombia, South America.

Establishment of long distance telephone lines in Colombia, South America, has been proposed by the American interests that have gained control of the telephone system at Cali.

Negotiations have been in progress with the Colombian government for the privilege of establishing long distance telephone lines between the important commercial centers, and some progress has been made. For example, it is stated that permission has been granted to construct a long distance line between Cali and Buenaventura.

There is great need for such a line on account of the great amount of importing and exporting done through Buenaventura by Cali merchants. Cali also needs telephone connection with Manizales, Bogota, Medellin and many other points, according to U. S. Consul William E. Chapman, Cali, Colombia.

Growth in Telephones in Foreign Countries; England's Increases.

Comparative figures of world telephone development for eight years since 1920 show that of the seven countries with the greatest telephone density, Australia alone shows a greater percentage increase than Great Britain during that period. Since 1920 telephones in Australia have increased by 111 per cent; in Great Britain by 78 per cent; in Germany by 63 per cent; in Canada by 57 per cent; in the United States by 42 per cent; in Denmark by 30 per cent, and in Sweden by 22 per cent.

"It may perhaps be urged," says the Telegraph and Telephone Journal, "that it is easier to show a high percentage development on one million than on 13 million telephones, and that the countries with low telephone densities should exhibit a more rapid growth. This, however, is not altogether the case, for telephone history shows that at that period when countries begin to reach a high density the development curve begins to soar upwards.

"In other words when the telephone habit is already firmly established, the demand for the telephone by those who have it not becomes the more insistent."

Regarded from this point of view, it is noteworthy that Britain's telephone increase grows yearly greater; in 1927 it was 121,000; in 1928 it was 125,000; and for 1929 it should be between 128,000 and 129,000.

Growth and Distribution of Telephones in Lithuania.

The following table illustrates the growth in the use of the telephones in Lithuania since 1919, the figures relating to the end of each year, except for 1929, when they apply to July 1, last: 1919, 360 stations; 1920, 634; 1921, 1,010; 1922, 2,016; 1923, 4,420; 1924, 5,145; 1925, 7,450; 1926, 9,396; 1927, 10,884; 1928, 11,969; 1929, 11,877. The figures were given out by the Lithuanian Information Bureau, Elta agency.

In the city of Kansas on July 1 last year, there were 3,407 telephone instruments of various kinds; in Klaipeda, 1,882. In other Lithuanian towns the number of telephones fluctuated from several dozen to 300 odd. The proportion of telephones per thousand of the population in all Lithuania is 5.12; in Kaunas 34.5, and in Klaipeda 52. Thus Lithuania's port makes greater use of the telephone than does her temporary capital.

For the Lithuanian village the telephone is still an exceptional convenience. For the most part it is confined to the richer estate owners, and even the larger scale farmers rarely possess one. Last year the figures for Lithuanian villages are as follows: In the Kaunas area, 36; Siauliai, 28; Panevezys, 26; Taurage, 21; Marijampole, 18; Kedainai, 17; Raseinai, 13; Telsiai and Trakai, 11 each; Mazeikiai, Kretinga and Sakiai, 8 each; Rokiskis, Utene and Vilkaviskis, 7 each; Vilkmerge, 6; Zarasai, 4, and Seinai, 3.

In the Klaipeda territory the position is different. There the villages and estates make more extensive use of the telephone, there being villages with three to five telephones each. In the Pagegiai district there are 114 villages possessing telephones; in the Klaipeda district there are 79, and in the Silute district, 55. Throughout Lithuania on July 1 of last year there were 498 villages and estates possessing telephone instruments; *i.e.*, Lithuania major, 293, and the Klaipeda territory, 205.

Long-Distance Carrier-Telephone System in New Zealand.

The following statement concerning the extension of the range of New Zealand's long distance telephone service was made by the Postmaster General recently:

"The first long-distance, single-channel carrier telephone system to be introduced into the Dominion is to be brought into operation for commercial use on the Christchuch-Wellington toll line shortly. The equipment is installed at Christchurch and Seddon, and by the provision of a second circuit between these two towns, will relieve congestion on this section and reduce delay on calls between Christchurch and Wellington, and between exchanges south of Christchuch and those north of Wellington.

"Further extensions and improvements to the long-distance toll-line network throughout the Dominion will be effected during the next 12 months by the installation of improved transmission systems between other important centers in both Islands. The next installment will improve service over Wellington-Auckland."

Improvement in Long Distance Telephony in France.

Two notable improvements in the field of long distance telephone communication recently took place in France—the opening of the new underground telephone cables, Paris-Marseilles and Paris-Bordeaux.

The first named is of great importance, placing as it does Marseilles, the chief freight and trans-shipment port of France, within three minutes of Paris for conversation purposes. This cable was inaugurated October 1, 1929, and with improved connections, Marseilles-Nice, will also provide greatly improved service between the capital and the Riviera resorts during the

winter. The number of available circuits joining Paris and Nice will now be increased from four to seven.

On about October 1, 1930, U. S. Consul H. Merle Cochran, Paris, reports the completion of the underground cable, Marseilles-Cannes-Nice-Menton, is promised, as well as similar new cable, Lyon-Modane-Turin and Lyon-Geneva, as branches from the main cable. The climatic conditions in the Rhone Valley between Lyon and Marseilles, where stormy weather at certain seasons works havoc with overhead wires, render the new underground cable particularly valuable.

The length of the cable is 496 kilometers, Paris-Lyon, with 444 wires, and 318 kilometers, Lyon-Marseilles, with 364 wires. Some ten amplifying posts have been established at important points.

The Paris-Bordeaux cable, opened to use late in September, 1929, is 543 kilometers long, contains 404 wires, and employs five relay stations. It is also reported that a new underground telephone cable from Tours to Nantes (about 200 kilometers) is being laid.

Work is steadily progressing on improvement and extension of the government telephone system in the suburban and regional zones about Paris in the department of Seine-et-Oise. The plans call for suburban centrals and circuits on the automatic system, joined up with the centrals in Paris proper, making a close liaison between the entire region about the city of Paris and the Paris municipal system.

The union of single lines in large cables as far as possible will be the policy. Thus a new cable from Paris to Versailles, some 11 miles long, now being laid, is expected to be available for use this spring.

France Observes First 50 Years of Telephony.

The completion of the first 50 years of telephony in France was recently celebrated. The first exchange in the country was set up in Paris in June, 1879, and started with seven subscribers! By 1899 there were nine exchanges in Paris with 6,255 subscribers, and 22 with 4,800 subscribers in provincial towns.

About that time the service was taken over by the government. Today there are about 150,000 subscribers in Paris and 400,000 in the provinces.

Prices in the Metal Markets.

New York, December 30.—Copper—Quiet; electrolytic, spot and future, 18c. Lead—Steady; spot new, 6.25c; East St. Louis, 6.10c. Zinc—Quiet; East St. Louis spot and future, 5.45c. Antimony—8.50c.

Personal Notes from the Field

John R. Hastie, of Evanston, Ill., for many years advertising manager of TELEPHONY, has been elected secretary of the Evanston Golf Club.

Curtis R. Rottger, president of the Indiana Bell Telephone Co. of Indianapolis, has been elected a member of the board of directors of the Indianapolis Chamber of Commerce.

R. L. Parker, manager of the Geneseo Cooperative Telephone Co., Geneseo, Ill., has been named president of the Geneseo Kiwanis club for the year beginning January 1. Mr. Parker has been secretary for the past year.

E. R. Allen, formerly assistant general manager of the Northwestern Illinois Utilities, Savanna, Ill., now living in Toronto, Canada, has been promoted to the position of division commercial superintendent of the Bell Telephone Co. of Canada, effective January 1. He will be located at Hamilton, Ontario.

H. R. Christianson of New Richland, Minn., is now in charge of the Iowa United Telephone Co.'s properties at Albia, Iowa, succeeding Charles Hoy who was transferred to San Antonio, Texas.

Mr. Christianson was manager of the New Richland Telephone Co. for several years and has had many years' experience in the telephone business.

Wallace L. Cook, of Chicago, who is a member of the board of directors of the United States Independent Telephone Association, has been nominated for president of the Beverly Country Club, one of the best known and most popular golf clubs in the south end of the Chicago district.

A motion is now in order to transfer the next convention of the association to the Beverly course. All of the golfers in the organization—and there are a good many—will vote "aye."

W. S. Vivian, of Chicago, who has many friends in the Independent telephone field, has been elected a vice-president of the Middle West Utilities Co. in charge of public relations. Mr. Vivian was for many years associated with the Independent field, first with the Michigan Independent Telephone Association and later with the national association. For the past several years he has been connected with the Middle West Utilities Co. and his friends will be glad to know of his recent advancement.

Miss Naomi Buck, associate editor of the Northwestern Bell, the magazine issued by the Northwestern Bell Telephone Co., was the central figure in a large church wedding at Lincoln, Neb., where she was married to Richard Frederick Wood, of Omaha.

Mrs. Wood comes of a newspaper family, her father having for years been editor of the Harvard Courier, where she received her training. Mr. Buck has been field secretary of the Nebraska Press Association for a number of years, and resides in Lincoln. A reception attended by several hundred friends followed the wedding ceremony.

Obituary.

Funeral services for **Edwin D. Blume,** general auditor for the Wisconsin Telephone Co., Milwaukee, Wis., who began his career as storekeeper with the former Central Union Telephone Co. at Indianapolis, Ind., were held December 27 in Indianapolis. The body was placed temporarily in a vault in Crown Hill cemetery. Mr. Blume died in San Diego, Calif., where he had gone in an effort to recover his health.

He entered telephone work in 1897. In 1904 he was appointed traveling auditor and several months later was made chief of that department. He remained in that position until the World War when he was loaned to the American Red Cross to systematize accounts of its various branches in the United States.

In November, 1919, he joined the Chicago Telephone Co. as traveling auditor and was appointed chief traveling auditor for the Chicago and Wisconsin Telephone companies, remaining in that position until he was promoted to the position of general auditor of the Wisconsin Telephone Co. on March 1, 1922.

Among business associates and friends who attended the funeral were officials of the Indiana Bell Telephone Co.; T. R. Keyes, general supervisor of methods, A. T. & T. Co., of New York; W. W. Hiller, treasurer, and L. Killum, general plant superintendent of the Wisconsin Telephone Co., Milwaukee: J. J. Kelley, auditor of receipts, and U. F. Cleveland, general auditor of the Illinois Bell Telephone Co., Chicago, and R. I. Gilleland, special agent of the Illinois Bell company at Danville, Ill.

Nathaniel T. Guernsey, Jr., whose father, bearing the same name, is vice-president of the American Telephone & Telegraph Co., died December 17 at his father's house in New York City in his 30th year.

Mr. Guernsey was associated with the law firm of Platt, Field & Taylor, New York, and would have become a partner on January 1. He was graduated from Yale in 1922 and from the Yale Law School two years later. He played on the varsity football team, and, while a member of the Yale swimming team, established a world's record as a plunger.

A Great Commonwea-
A Great To

THE history of the rise of a great commonwealth to prosperit orl importance, is always composed of a number of smaller histori kir high in importance among these, is the history of a country's co tic system. Australia's telephone system has always been given serious n b the country's most far-sighted statesmen and able engineering cor as consequence it today ranks as one of the finest in the world.

Sydney, Australia's largest and most important city, now has eight wg Automatic Dial exchanges serving some 55,000 telephones. In oth tar cities of the commonwealth—Melbourne, Perth, Port Adelaide, B ar Geelong—Strowger Automatic Dial equipment is daily rendering tel use the highest type of modern service. The high esteem in which this nt held by Australian Post Office engineers, is a reflection of the keen nt governmental affairs which has been responsible for this country's tab progress and development.

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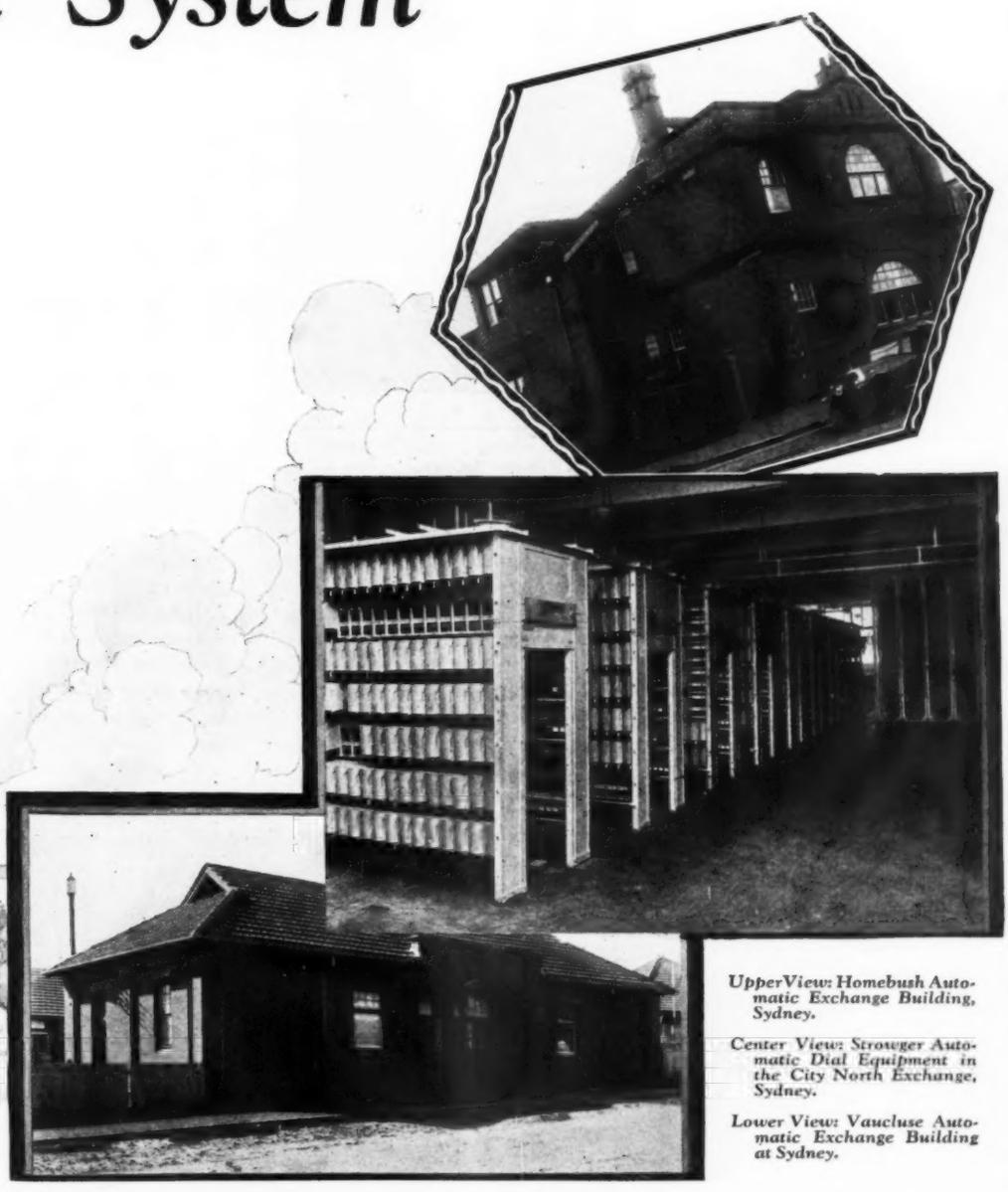


Upper View: Homebush Automatic Exchange Building, Sydney.

Center View: Strowger Automatic Dial Equipment in the City North Exchange, Sydney.

Lower View: Vaucluse Automatic Exchange Building at Sydney.

AUTOMATIC
STEMS

When writing to Automatic Electric Inc., please mention TELEPHONY.

New Service at Harrisonville, Mo.

Progress of Growth of Cass County Telephone Co. Paralleled by Progress of Harrisonville—New Common Battery System Placed in Service on September 1, 1929—Features of Switchboard—"Open House" to Public Held in October

By E. R. Sears,
Sales Representative, Kellogg Switchboard & Supply Co.

The early history of the Cass County Telephone Co. is interesting because of the late W. B. Scruggs' struggles for its promotion, and, incidentally, of his services to Harrisonville; for the progress of his efforts is paralleled by the progess of Harrisonville.

It was during Mr. Scruggs' early business career that his acumen was manifested, for he carefully watched the development of the telephone, both as an industry and as a home and office convenience. He believed the people of Harrisonville would patronize a company that would guarantee them good telephone service. This belief proved his keen foresight, for it was well founded. With this idea in mind he organized the Cass County Telephone Co., the organization receiving its franchise in January, 1898.

A 100-line switchboard was installed in the office at 300 East Wall street, which was opened for business June 15, 1898. By July the list of subscribers had grown from 40 to 66.

By 1902 the company had outgrown the original 100-line board and Mr. Scruggs, with good service still in mind, placed an order with the Kellogg Switchboard & Supply Co. for a 300-line magneto switchboard. This was one of the first magneto boards the Kellogg company manufactured, as it was No. 472. Since that time the Cass County Telephone Co. has standardized on Kellogg equipment.

Mr. Scruggs' death occurred in December, 1925, after which his daughter, Miss Wilma Scruggs, was appointed general manager to carry on her father's work.

Miss Wilma Scruggs, General Manager, Cass County Telephone Co., Harrisonville, Mo.

By this time the number of subscribers had reached a figure well over a thousand and Miss Scruggs started laying plans for a new common battery system. Consequently, in keeping with her father's policy of rendering the best and most efficient service possible, Miss Scruggs placed an order with the Kellogg Switchboard & Supply Co. This order called for a two-section, six-position service switchboard and 650 common battery telephone sets.

The switchboard consists of one hospital position, two toll positions, one rural position, and two full feature local positions having these features: Keyless listening, machine ringing, double disconnect, line lamp recall, revertive ringing tone, multiple line lamp call distribution, dark key shelf, secret service and non-interference.

The old office was moved back and a modern building was erected in its place. The new building that houses the Kellogg board is of modern design and construction with an exterior of buff face brick with darker face brick and terra cotta trim.

The commercial office and operating room are on the west, with the terminal room and operators' restroom on the east side. The switchboard is set in the partition between the operating and terminal rooms, which makes a very efficient and desirable arrangement.

After a construction program which covered a period of six months and a total expenditure of over $65,000, the new equipment and outside plant were cut into service on September 1, 1929, at 10 p. m. The cutover was the climax to the work of rebuilding the entire outside plant, erecting a new building, and installing over 600 Kellogg common battery telephones.

The plant department of the company is under the direction of John H. Patterson, plant superintendent, who is a veteran of the company, having been with it since it was organized. The commercial work is in direct charge of Miss Wilma Scruggs, who is ably assisted by her sister, Mrs. S.

The New Telephone Building in Harrisonville, Mo.—Front View of Six-Position Kellogg Service Switchboard Now Serving Subscribers of Cass County Telephone Co., From Its New Building.

The General Office of the Cass County Telephone Co. Is Epuipped With Modern Business Aids Such as Adding Machine, Billing Machine, Fireproof Records Safe—A Corner of Operators' Restroom in New Telephone Building at Harrisonville, Mo.

J. Wooldridge, in this part of the work.

Nine hundred people were the guests of the company on October 12, from 10 a. m. to 10 p. m. The occasion was an "open house" to the public. This event Miss Scruggs had planned for some time, and it is doubtful if any one enjoyed it more than she. The reception was held in the new building.

A continuous stream of visitors filed through the building into the terminal and operating rooms, where the operation of the equipment was explained by the employes of the company and representatives of the Kellogg Switchboard & Supply Co. Refreshments were served to all and there were roses for the women and cigars for the men.

Harrisonville is a thriving city of 2,500, the county seat of Cass County, located 40 miles south of Kansas City on Highway No. 71. Beyond a doubt, Harrisonville subscribers are now enjoying telephone service equal to that of any city in the United States.

Bureau County Company, Princeton, Ill., Sold to Springfield Man.

A syndicate represented by Harry B. Crandell, Springfield, Ill., has completed negotiations for purchase of the Bureau County Independent Telephone Co., Princeton, Ill., which serves 7,000 patrons in 11 communities in that section of the state. For the past several years it has been the only Independent system in that part of the state, rejecting several offers to purchase the property made within the past two years.

The transfer of ownership involves $600,000, an offer of $30 a share for 20,000 shares of the company having been made and 16,000 shares have already been deposited with the Citizens National Bank, Princeton, in response and acceptance of the offer. The new management is expected to take over the company after the first of the year, although Elmer E. Sapp and other officials will continue in their offices until March when the new board and officers will be named.

Mr. Sapp, the retiring president, has been connected with the Bureau County Independent company for approximately 23 years. He became a director of the company in 1907 and was elected president in March, 1910, when he also became general manager, serving in that capacity to the present date with the exception of one year. Mr. Crandell, who heads the purchasing syndicate, was consulting engineer for Bureau County company in 1921 when it appeared before the Illinois Commerce Commission in a rate hearing. At that time he made a comprehensive survey of the lines and prepared valuation of the property.

The assets of the company are valued at $426,721.16, which includes $123,206.76 for pole lines and $84,995.92 for exchange station equipment.

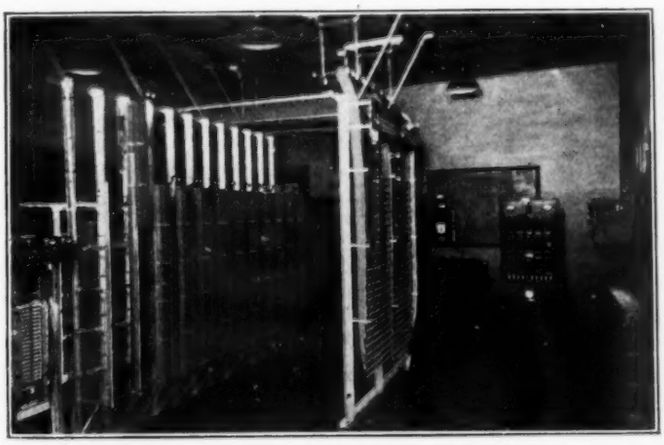
The total operating revenues for last year, which are the latest figures available, amounted to $155,364.32 and the net earnings available for paying dividends amounted to $26,642.77.

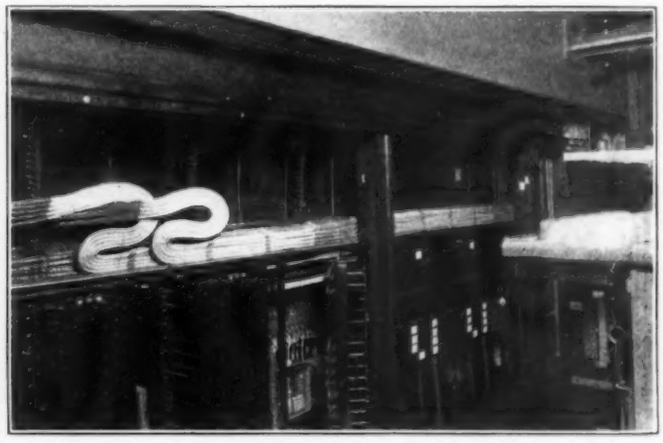
The earnings of the company, it is stated, have been sufficient to pay an 8 per cent dividend besides taking care of depreciation, insurance, and other reserve funds whose aggregate is in excess of $120,000.

Fire in Chicago Exchange Cuts Off Service to 23,000 Subscribers.

Telephone service over about 23,000 dial telephones connected to the State office in Chicago was interrupted by a fire during the night of December 19. A large staff of men succeeded in restoring all of those telephones for outgoing calls early the next morning. Incoming service to those telephones was limited, but was increased as the repair work progressed.

All the telephones had complete service on Monday, December 23.





Main Distributing Frame, Relay Rack and Power Equipment in the Harrisonville, Mo., Exchange.—Rear View of Kellogg Service Switchboard Installed in Partition Separating Terminal Room From Operating Room.

WALLACE L. COOK
President and General Manager

GEO. W. RODORMER,
Secretary and Sales Manager

EXACTLY twenty years ago the Reliable Electric Company was organized to manufacture protective equipment for telephone companies.

From the first, fair dealing, honest workmanship and fine materials have guided this organization in giving prompt service with quality products which are being constantly improved.

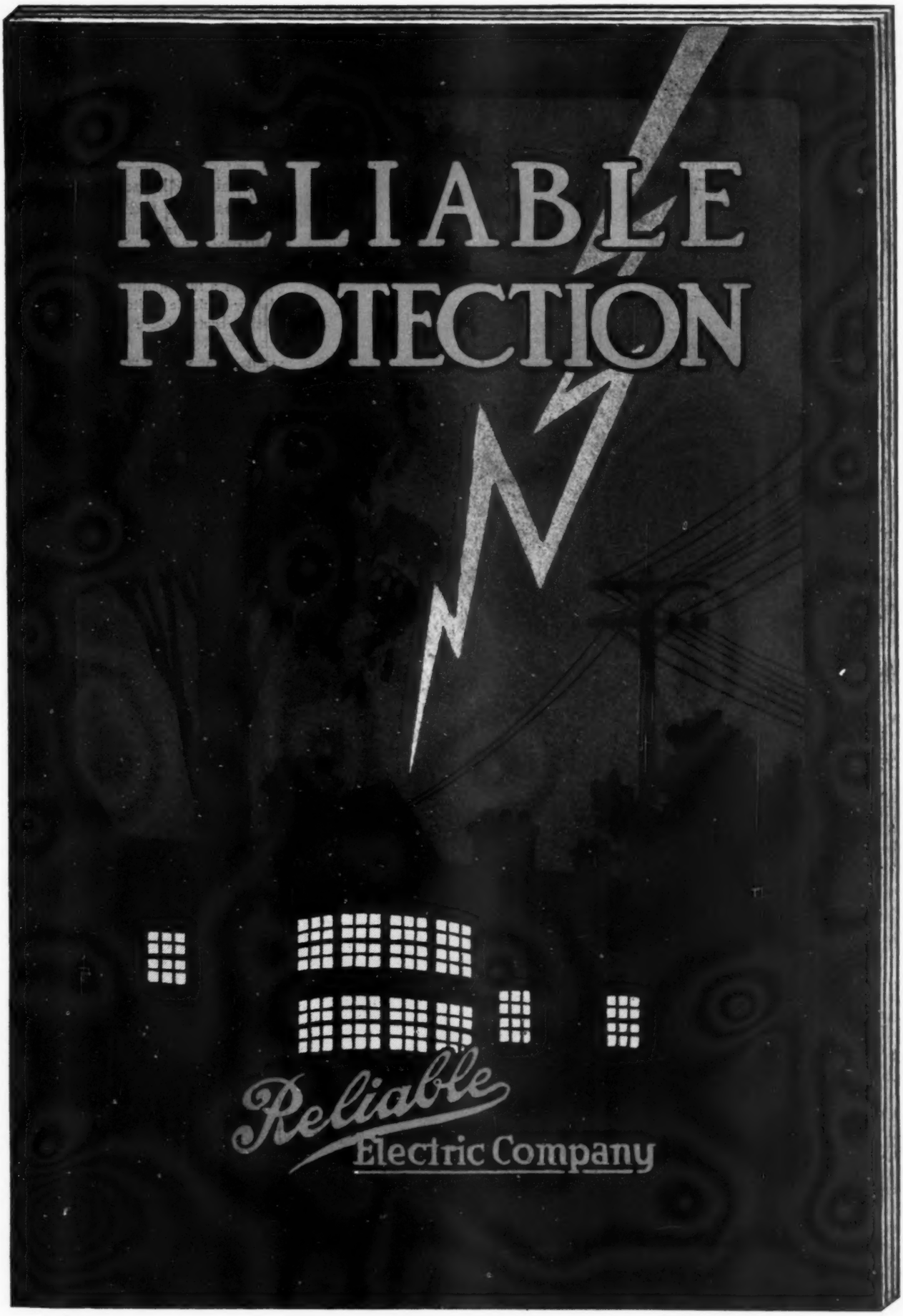
On this—its twentieth anniversary, those of the Reliable Electric Company extend to the telephone industry the promise of continued high quality of workmanship and materials in all its products.

Reliable Electric Company

3145 Carroll Avenue Chicago, Ill.

JOHN BROWN COOK

E. WINSTON RODORMER



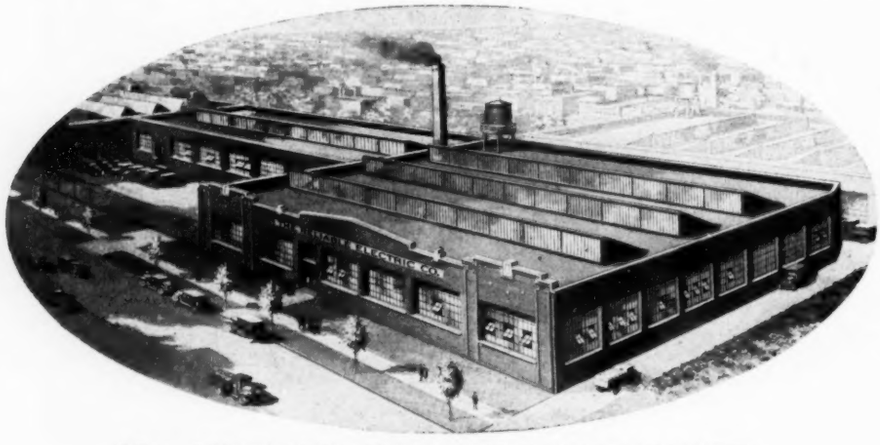
The Reliable Electric Company's new catalogue is now ready for distribution. Write for your copy.

With the Manufacturers and Jobbers

Reliable Electric Co. Passes 20th Milestone in Manufacturing.

There is considerable interest to telephone men in the news that Reliable Electric Co., 3145 Carroll avenue, Chicago, has just completed its 20th year of service to the industry.

In 1909, when the company was organized to manufacture telephone protective equipment, it was located at 12 South Jefferson street, Chicago. Pioneer telephone men will remember the small quarters in which Reliable equipment was first produced. By degrees, as in most stories of achievement, this factory proved inadequate to handle constantly increasing business. So the company was obliged to move, in 1913, to a larger building.



View of Manufacturing Plant of Reliable Electric Co., Chicago.

Shortly after this, prompted by their desire to improve their already successful service to the industry, officials of the Reliable Electric Co. purchased vacant property, just outside Chicago's downtown area, on which to build the company's own factory. It was, therefore, an eventful day when, in 1920, the present modern factory was occupied.

Even with this, the company found larger space quite necessary, and in 1928, seven years after the new building's completion, an addition to it was needed.

With the 20th anniversary of the company, Wallace Cook, president and general manager, has reminiscences of his 27 years of service in the telephone business, 15 of which have been spent with the Reliable Electric Co.

His first telephone experience was in the engineering department of the American Electric Co. under the "Paddy" Burns regime. Later he entered the engineering, installation and sales departments of Western Electric Co. During these years of service he was engineer of the St. Louis branch house of the Western Electric Co. At present, Mr. Cook is a director of the United States Independent Telephone Association.

Geo. W. Rodormer, secretary and sales manager, was one of the company's original founders. For him there are 29 years of association in the telephone business to remember, all in sales work which has taken him all over the country and brought him pleasant associations with thousands of telephone men. Before the organization of the Reliable Electric Co., Mr. Rodormer was traveling representative for the American Electric Fuse Co. of Muskegon, Mich.

Since its inception, Mr. Rodormer has been an active member of the Independent Pioneer Telephone Association of the United States, having served in recent years on its executive committee.

Of recent years two new members have been added to the Reliable Electric Co.'s personnel. These are E. Winston Rodormer and John B. Cook, both being graduates of Dartmouth College.

E. Winston Rodormer, who finished his schooling in the spring of 1927, has spent a year in field work at Park Ridge and Pekin, Ill., under the able guidance of W. S. Green, general manager of the Middle States Telephone Co. At present he is learning the business in all its departments with the eventual intenton of working into the sales end. During the past two years he has attended a number of state conventions and has made many friends in the field.

John B. Cook, who has been with the company since September, 1929, is particularly interested in the manufacturing end. In college he majored in physics, is greatly interested in the new discoveries of modern science, and is a firm believer in scientific research associated with industry.

During recent years the Reliable Electric Co. has been manufacturing a great number of specialties in addition to its protective equipment. These products, although comparatively new, are already well known and the demand for them is constantly increasing.

Stromberg-Carlson Junior Multiple Board for Indiana Exchange.

F. M. Lantz, manager of the Indiana properties of the United Corp. of Abilene, Kans. announces the purchase for Flora, Ind., of a three-position Stromberg-Carlson junior multiple switchboard with the necessary central office equipment and central energy telephones. The outside wire and cable plant will be put in first class condition to operate on the central energy system.

The various other Indiana properties of the United Corp. are being studied with a view of giving first class telephone service and probably some of them will later be changed to central energy.

George S. Gardner in Charge of South American Construction.

George S. Gardner has recently been made superintendent of construction by the construction division of the Automatic Electric Co., Ltd., of Chicago, for its toll project in Colombia, South America. Under arrangements which have been made, this toll line will connect the cities of Buena Ventura, Cali, Palmira, Buga, Cartago, Pereira, Manezales, Armenia, Ibague, Giradot, Bogota and intermediate points in Colombia.

A New Toll Line Construction Project in Columbia, South America, is in Charge of George S. Gardner of Columbus, Ohio.

Mr. Gardner has a long record of successful activity in the telephone field. He

has acted as superintendent of construction on some of the largest jobs of telephone and toll line construction completed in the Ohio area. During the last several years, he has been in general telephone engineering and appraisal work, both for himself, and with Gustav Hirsch, well-known consulting engineer of Columbus, Ohio.

The increasing development of telephone facilities and other public utilities in Columbia, and the growing business importance of that country, make this new toll project, of which Mr. Gardner will have charge, of considerable interest and importance in the telephone field.

American Creosote Works to Build Treating Plant in Tennessee.

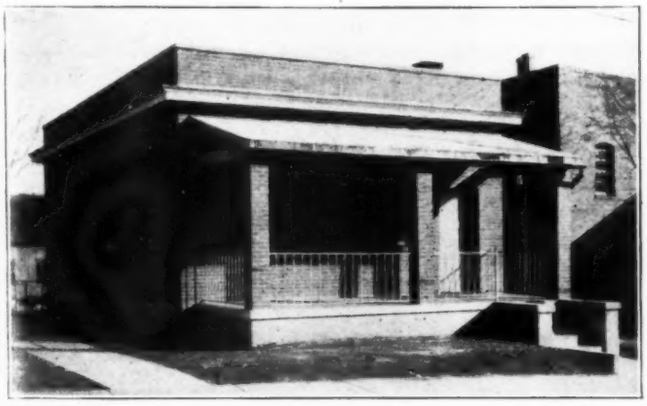
The American Creosote Works, New Orleans, La., has secured a site at Jackson, Tenn., and will begin immediately the construction of a large creosoting plant of the latest and most efficient type. Bids will be received early this month for equipment of all kinds instrumental to the construction of a plant of this character.

The new plant will be equipped for the treating and handling of material of all kinds, but will specialize in the preservation of hardwood cross ties. The location at Jackson, Tenn., affords an opportunity to draw material from the entire South, and this plant will be one of the largest in the United States.

Laurens, S. C., Now Provided with Automatic Service.

On the night of November 20 there was cut into service in the city of Laurens, S. C., an automatic telephone system. This installation consists of 600 lines, housed in a new fireproof brick building, and serves the people of Laurens, which has an inhabitation of about 5,000 people.

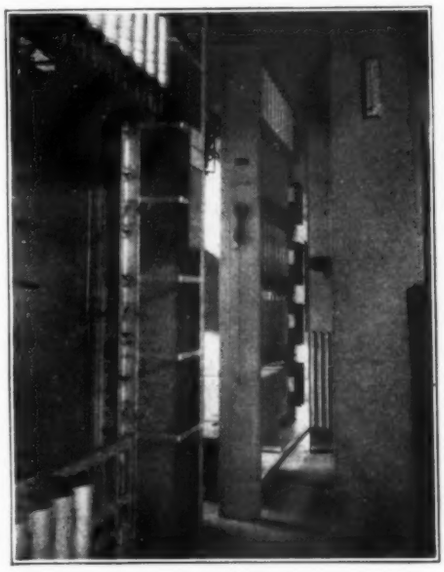
The old system was magneto service and the improvement is the direct result of a request by the citizens of the town for an up-to-date plant.



The Laurens, S. C., Exchange Building of the South Carolina Continental Telephone Co.

On the night of November 20, at nine o'clock the mayor of the city closed down the first line and made the first call through the system to the fire department, in the presence of a gathering of about 25 of the prominent people of Laurens.

The system at Laurens is one of the exchanges of the South Carolina Continental Telephone Co. and is in charge of R. L. Knell, manager. According to the expressions received from the patrons of this system, during the first two weeks after this installation was made, Laurens now enjoys service second to none for a town of its size in the United States.



A View of the Automatic Equipment of the Laurens, S. C., Exchange of the South Carolina Continental Telephone Co.

Stromberg-Carlson Official Predicts Biggest Radio Year.

Prediction that 1930 will be the largest year in the history of the radio industry from the standpoint of sales was made by Ray H. Manson, chief engineer of the Stromberg-Carlson Telephone Mfg. Co., in a recent address before the Rochester Engineering Society.

Mr. Manson explained that more and more radio owners will exchange their old battery sets for the modern all-electric receivers, as the public now realizes that the seemingly large original cost of the modern receivers in comparison with battery sets is more than equalized by the difference in cost of operation of both sets. He pointed out that the operation costs for electric current alone for the battery sets amounts to about $50 each year, while that of the modern "all-electric" sets is only $10 for the same hours of operation. This is an annual saving of $40.

Another reason he gave for predicted increase in radio business for 1930 was that radio is no longer a luxury, but a necessity everywhere—in the home, in the business house, in trains, in aviation, and in the schools—and he estimated the demand for the better makes of sets would greatly surpass the supply.

In speaking of the radio industry in 1929, Mr. Manson said: "This year has been the greatest radio year in the history of the business."

The greatest factor in making this banner year was the improvement in radio apparatus. Notable among these advances was the A. C. screen grid tubes. These tubes have proved their worth, and their performance has assured radio engineers that no changes are needed in them for 1930 sets. The use of the screen grid tubes meant an improvement over 1928 sets in sensitivity, selectivity, audio amplification and better reproduction. By the use of these tubes, the 1929 sets also were made quieter and the A. C. hum has been practically eliminated.

Another big improvement incorporated in the 1929 sets, according to Mr. Manson, was the use of a UY-245 power tube which has provided greater volume without distortion in the receiver output circuit.

He told the engineers that the design of loudspeakers centered around the built-in electro-dynamic type, which has afforded a very natural reproduction with big volume.

"Present indications are that the most noticeable changes in the 1930 radio receiving sets will be in the cabinets," Mr. Manson said. "Efforts will be directed by set designers to make cabinets more distinctive and to give them a note of individuality."

Proposed Cable Between Poland and Island of Bornholm.

It has for some time been planned to establish a submarine telegraph and telephone cable connection between Poland and Scandinavia, reports U. S. Assistant Trade Commissioner Paul M. Pearson, Copenhagen, Denmark; and reports are now current that within the near future a cable will be laid between Gydnia and the island of Bornholm.

Originally it was planned to establish a cable connection between Sweden and Poland as well, but this plan, it is said, has been abandoned and thus Poland's entire telegraphic and telephonic correspondence with the Scandinavian countries should go over the proposed cable to Bornholm.

Radio Corp. and Electrical Firms Form Radiotron Company.

Through the formation of the RCA Radiotron Co., Inc., the vacuum tube research, engineering, manufacturing and selling activities of the Radio Corp. of America, the General Electric Co. and the Westinghouse Electric & Manufacturing

Co. will be completely unified as of January 1, as the second step in the process of giving the Radio corporation direct control over all phases of radio manufacturing and distribution.

Although details were not announced, it is reliably reported that RCA will own 50 per cent of the stock in the new company, with General Electric holding 30 per cent and Westinghouse 20 per cent.

Shifts in Executives in Mills of the Copperweld Steel Co.

The Copperweld Steel Co. announces the appointment of the following men to positions in the mills at Glassport, Pa.

A new position, that of general superintendent, has been created. F. A. Whitehead, formerly superintendent of rolling mills, is now general superintendent, S. L. Gibason, formerly assistant superintendent of rolling mills, has become superintendent of rolling mills. J. C. Glover is now assistant superintendent of rolling mills.

National Fire Proofing President Active in Tile Associations.

Sidney F. Heckert, president of the National Fire Proofing Co., of Pittsburgh, Pa., has just been elected president of the Eastern Hollow Building Tile Manufacturers' Association. This association has its headquarters at 420 East 23rd street, New York City, and is composed of the leading manufacturers of structural clay products on the eastern seaboard.

Mr. Heckert, at this time, is also serving as president of the Structural Clay Tile Association of Chicago, the national organization in that industry, with which body, however, the eastern manufacturers are not affiliated.

Baker & Co., Inc., Announce Death of Company President.

Charles W. Baker, president of Baker & Co., Inc., died on Saturday, November 16, 1929

Baker & Co., Inc., located at 54 Austin St., Newark, N. J., manufacture platinum wire, foil, sheets, rivets and contacts.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

New York Rate Increase Order Signed by Court.

A final decree was filed on December 27 in the United States District Court for the Southern District of New York in the rate suit of the New York Telephone Co. This decree carries into effect the decision of the court announced on November 11, 1929, and was signed by the three judges of the statutory court, Judges Martin T. Manton, Thomas W. Swan and Harrie B. Chase, all judges of the circuit court.

The decree states the value for rate-making purposes of the property used by the company in furnishing the classes of service for which the New York Public Service Commission had fixed the rates complained against by the company. Such value is found by the court to have been $400,571,699 as of July 1, 1926, and $475,-590, 609 as of July 1, 1928.

The court states that 7 per cent is the fair return to be earned by the company on the value of its property. Having found that the present rates have fallen short of earning such return, the court declares them to be confiscatory and invalid and enjoins their further enforcement. The decree further permits the company to increase its rates to such extent as may be necessary to earn the return specified by the court.

It is also provided that the plaintiff "shall recover its taxable costs and disbursements of the defendants and intervenor-defendant, including the sum heretofore allowed on account of the compensation and expenses of the special master ($50,000) and paid by the plaintiff on an order of the court filed August 26, 1926, together with interest, and that the defendants shall pay such additional amount as may be allowed the special master."

In connection with the filing of the decree, J. S. McCulloh, president of the company, made the following statement:

"We are now engaged in the preparation of new rates in accordance with the court's decree, to take the place of those which have been enjoined. These rates will cover various types and classes of service and facilities in some 340 points and places within the state of New York and the work of their revision is a complicated and difficult undertaking. This work, however, is underway and will be proceeded with as rapidly as possible.

Time does not permit of the complete revision of the rate schedules and the performance of the amount of detail labor involved in changing the basis of charges and the billing of the more than 1,600,000 subscribers in the state prior to the New Year. The new rates will therefore have to go into effect on a date subsequent to January 1.

In accordance with the definite policy of the company which has been heretofore announced, it seeks to make only such adjustment in its rates as will permit it to furnish the best possible service at the lowest cost consistent with financial safety and enable it to continue to meet adequately the telephone demands of the state."

The total number of telephone stations in New York City is 1,790,370, of which 1,007,342 are business telephones and 783-028 are residence telephones. In the rest of the state there are 815,007 stations, of which 262,464 are business telephones and 552,543 are residence telephones.

Appeals to Federal Court Against Order Establishing Exchange.

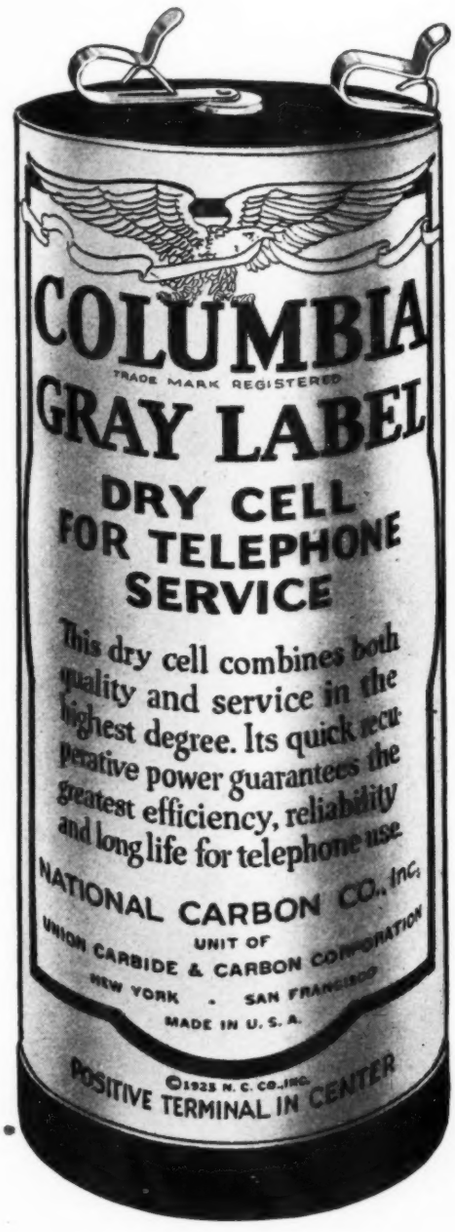
Several fundamental questions of public utility regulation by the state were brought to the attention of Judge Robert C. Baltzell in the United States district court in Indianapolis, Ind., during a hearing of the petition of the Versailles Telephone Co. of Indiana on December 23 to set aside orders of the Indiana Public Service Commission, made in 1928, which permitted the Farmers' Mutual Telephone Co. to set up an exchange just outside the city limits of Versailles. According to Judge Baltzell, the case raises an entirely new issue in his court concerning the regulation of public utilities by the state.

In virtually all cases heretofore taken to federal court from the commission, the question of confiscation of property without due process of law, was the paramount issue. This particular case brings to the federal court the question as to the rights of the Indiana commission, and while the companies involved are none too important, the questions of law, because of their precedent features, are decidedly new and the telephone company has employed some of the best legal talent in the state. Arraigned on the other side is the entire force of the state's attorney general's office.

The Versailles Telephone Co., now owned by the Batesville Telephone Co., brought suit seeking an injunction for relief from the commission's orders under protection of the Fourteenth amendment to the Constitution which prohibits confiscation of property without compensation or due process of law. Orders of the commission in permitting the Farmers Mutual Telephone Co. to become a public utility and to establish an exchange for rural patrons surrounding Versailles, the petitioners allege, amounted to confiscation of their property.

The question of whether the public service commission has full jurisdiction over

"They're made to last longer!"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TRADE MARK REGISTERED
GRAY LABEL
DRY CELL FOR TELEPHONE SERVICE
This dry cell combines both quality and service in the highest degree. Its quick recuperative power guarantees the greatest efficiency, reliability and long life for telephone use.
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COLUMBIA Telephone Batteries last longer because they are completely protected against hydrogen suffocation. *All* telephone dry batteries produce hydrogen gas in discharging.

Hydrogen cuddles up around the negative pole in bubbles—restricts current output in most batteries. Scientists call it "Polarization."

Columbia Telephone Batteries resist polarization. Their fast regenerative powers overcome it. Their quick recuperation when the receiver is down is due to an internal and effective chemical that absorbs hydrogen.

That's why Columbia Telephone Batteries are more economical! Why more are used. Put them in *your* circuit for efficient, long-lasting service.

NATIONAL CARBON COMPANY, INC.
General Offices: **New York, N. Y.**
Branches: **Chicago Kansas City New York San Francisco**
Unit of Union Carbide UCC ***and Carbon Corporation***

Columbia Telephone Batteries
—they last longer

public utility properties operating outside cities and towns was raised. Another question brought up was whether actions other than those involving rates could be regarded as coming under the confiscation guaranties of the Constitution. This is the first time, it is believed, that a utility case has been taken to federal court where the rate question was not involved.

During the testimony it developed that these farmers' lines at one time were connected with the Versailles exchange, each patron of the rural lines being charged 25 cents for the connection. The farmers owned their own poles and lines and the charge was for connection to stations inside the city of Versailles and for long distance connections.

The public service commission, on petition by the Versailles company, increased this charge to 50 cents and the rural subscribers on the ten lines promptly ordered their lines disconnected. It was then they joined together to form the Farmers Mutual Telephone Co. and petitioned the commission for an exchange outside the city of Versailles, which was granted. Now this exchange wants to enter the city of Versailles from its own exchange.

It is more than likely, if the commission's order is allowed to stand creating the Farmers company a public utility, the way will be opened to permit entry into the city of Versailles, and it is for this reason the Versailles company is fighting it.

At the close of the hearing the court instructed attorneys for the plaintiff to file written briefs by December 31, the defendants to answer by January 15 and the plaintiffs to file their final briefs by January 20. The judge said he would make a ruling shortly thereafter.

RCA Permanently Enjoined in Radio Tube Contract Suit.

Judge Hugh M. Morris in the United States District court on December 23 handed down a final decree granting a permanent injunction restraining defendants from using the "contract clause" among licensed manufacturers of radio sets in the case of the DeForest company et al. against the Radio Corp. of America, and then granted the request for an appeal by the defendants to the Third Circuit Court of Appeals.

The suit is that of Arthur D. Lord, receiver in equity for the DeForest Radio Co., the Northern Mfg. Co., United Radio & Electric Corp., Televocal Corp. and Harry Chirelstein, doing business under the name of the Sonatron Tube Corp., against the Radio Corp. of America.

The final decree sets forth that the court's decision is based on the second sentence of certain contracts in evidence in the case, entered into between the Radio Corp. of America and certain other companies on one part and certain manufacturers of radio receivers on the other part.

This part of the contract, for the sale of radio tubes on the condition that the purchasers shall not use or deal in the goods of a competitor or competitors of the seller, in that the effect of such a contract was to "substantially lessen competition" or tend to create a monopoly in commerce of such tubes, is held to be in violation of Section 3 of the Clayton act.

The decree grants a permanent injunction restraining the officers and employes of the Radio Corp. of America from enforcing or attempting to enforce directly or indirectly the contracts of sale.

The motion of the Radio Corp. of America to have the bill and supplemental bill of the plaintiffs dismissed was denied in the decree and the DeForest Radio Co. et al. are to recover from the Radio Corp. of America the costs of the suit.

The Index for Volume 97 of "Telephony."

The index for Vol. 97 of "Telephony," which was completed with the issue of December 28, 1929, is now ready for distribution among those who keep complete files.

In this index are listed all of the important articles which have appeared between July 6 and December 28. It will be supplied free of charge to those making application.

Company Methods Criticized by Ohio Commission Accountant.

The hearing on the application of the Cambridge Home Telephone Co., Cambridge, Ohio, for an increase in rates was had by the entire membership of the Ohio Public Utility Commission on December 9 and continued to December 16.

On December 9 Gustav Hirsch, consulting engineer of Columbus, appeared as a witness for the telephone company and introduced in evidence the inventory and appraisal made by him of the company property, showing an appraised value of $630,395 for rate-making purposes. He also introduced exhibits of revenue and expenses taken from books of the company showing the need of increased rates.

Following the cross-examination of Mr. Hirsch, which ended on December 11, testimony was introduced on December 16 by E. K. Woods, an accountant in the employ of the commission, but due to the fact that copies of the exhibits introduced by him were not presented to the telephone company for its inspection prior to the date of his testimony, no cross-examination of Mr. Woods was had, and the commission set January 13 as the date for further hearing in the matter.

Mr. Woods alleged that expenses of the company had been greatly increased through salary and other charges to the interests of the controlling company. From his direct testimony it appears Mr. Woods is attempting to prove that corporate officers of corporations operating in Ohio are not entitled to receive a salary unless they reside in the state of Ohio.

The Cambridge case, being the first telephone case to be tried by the Ohio commission under the new law enacted early this year, is being carefully followed by telephone and other utility interests in the state, and it is not to be expected that the telephone company will permit to go unchallenged the testimony of Mr. Woods relating the salaries of the corporate officers of the company.

No questions were raised by Mr. Woods regarding the accuracy of the books of the telephone company. It appears from his direct testimony that he is attempting to prove that some items of expense are higher under the present management than under the former. He did not, however, introduce any evidence to show that the expenses reflected by the books of the company had not actually been incurred by the operation of the property.

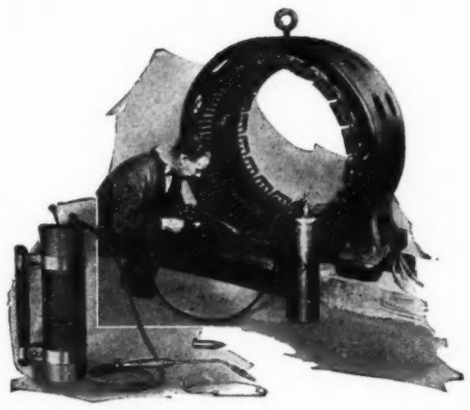
The commission's witness, according to company officials, apparently has adopted the theory that the value for rate-making purposes is to be arrived at by deducting from the depreciated inventoried value of the property the book reserve for depreciation. This theory has been repeatedly frowned upon by the United States Supreme Court which has uniformly held that the fair value of the property at the time of the investigation must be used as the basis for rate-making purposes, the depreciation on the property being determined by personal inspection.

Missouri Company Ordered to Make Rate Uniform.

Elimination of discrimination in rates between stockholders and non-stockholder subscribers of the Farmers Mutual Telephone Co. of Maitland, Holt county, was ordered recently by the Missouri Public Service Commission after a rate investigation instituted by the commission upon its own motion. A new schedule of uniform rates for telephone service in Maitland to which the company and subscribers had agreed while the investigation was in progress, was ordered put into effect in 10 days.

The Farmers Mutual Telephone Co. has operated in Maitland for nearly 30 years and until the last few years operated strictly as a mutual company, furnishing service only to stockholders. In the last few years service was furnished to other persons, some of whom were required to purchase shares of stock.

A complaint that stockholders were being furnished service at lower rates than non-stockholders, and that other discriminations in service were being practiced, was filed with the commission last March



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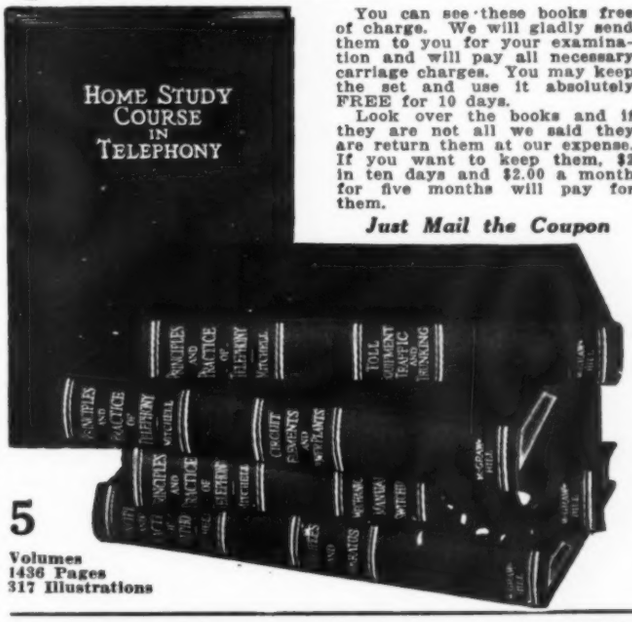

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The order issued provides rates shall be uniform for all subscribers, whether stockholders or non-stockholders, and that service shall be uniform.

The rate was fixed at $1.25 a month for direct line residence or business telephone and $1 a month for two-party residence or business telephones.

Bell to Rehabilitate Properties Upon Their Acquisition.

The Interstate Commerce Commission recently authorized the Bell Telephone Co. of Pa. to acquire the properties of the Bear Gap & Numidia Telephone Co., which has an exchange at Elysburg, Northumberland county, and serves 283 subscriber stations. It owns 28 miles of pole toll lines.

With the exception of the service performed by the Numidia company, the Bell company is furnishing all telephone service in that part of Pennsylvania, and can maintain and operate the properties of the Numidia company more efficiently and economically than they can be operated as a separate unit.

The Department of Commerce recently established an emergency landing field at Numidia and requested emergency telephone service. This field is on the direct mail route between New York and Cleveland. It was because of this request, which the Numidia company was unable to comply with, that the contract between the Bell and Numidia companies was made. The Bell company estimates that an expenditure of $36,112 will be required to rehabilitate the properties.

On June 20, 1929, the Bell company contracted to purchase all the physical properties of the Numidia company, free from all liens and encumbrances, for $15,000, payable in cash. An appraisal made by the general plant engineer of the Bell company found the reproduction cost new of the properties to be $54,341.04, and less depreciation $19,731.31.

The estimated value of property to be retired from service is $1,985.96, and the cost of removing the retired property is expected to exceed its salvage value by $1,975. In 1928, operating revenues of the Numidia company were $5,546.11, and operating expenses and taxes totaled $5,750.55.

Higher Rates Approved for Metallic Line Service.

The Nebraska State Railway Commission is of the opinion that in instances where about three-fourths of the subscribers to an exchange are desiring better telephone service, their desires should be seriously considered, and their request will be granted without a formal hearing, subject, however, to complaint. Believing so, it has authorized the Lincoln Telephone & Telegraph Co. to increase business rates from $2.25 to $3.00 per month; one-party residence from $1.50 to $2.00, and two-party residence from $1.50 to $1.75, at its Davenport exchange.

The commission finds that the present service furnished is in instances unsatisfactory because of crosstalk and inductive interference. The commission says it is aware of the constant development of electric transmission lines and recognizes the difficulty of furnishing highly efficient service over a grounded circuit where such telephone lines are paralleled by transmission wires. Seventy-three per cent of the subscribers consented to the increase if the lines were changed to metallic from grounded.

The commission says that on previous occasions it has approved similar rates for metallic service under conditions not dissimilar to those at Davenport, and that they are reasonable and necessary.

Rural Rate to Correspond with Prevailing Adjacent Rate.

In sustaining the application of the Northwestern Bell Telephone Co. for authority to establish a $2.50 gross or $2.25 net rural rate at its Clarkson exchange, the Nebraska State Railway Commission takes occasion to state that the rate suggested by the applicant, which the subscribers have agreed to pay, is the prevailing rate now published and collected by the company in the adjacent territory served by it. This rate was authorized by a decree of the federal court, and the commission, taking into consideration such decree and the apparent willingness of the subscribers to pay the rate, will grant the request.

The company has not been supplying rural service from its exchange at Clarkson, but 11 subscribers on a rural farm line asked it to buy the line and give them direct instead of switched service in the future. The commission under the circumstances allowed the request without a hearing.

Asks Increased Rates Because of Increased Investment.

The Nebraska Continental Telephone Co. will shortly substitute automatic service for common battery at its exchange at Columbus, and has asked the Nebraska State Railway Commission to authorize an increase in rates to take care of the increased investment.

The Platte County Independent Telephone Co. operated exchanges at Columbus and Duncan, a nearby point, for a number of years, and was one of the first to join the Continental group. Duncan, which serves in the neighborhood of 200 stations, will be made semi-automatic, and all rural lines will be metallicized instead of grounded as at present.

The company now has $271,857 invested in the two plants, and when the transformation is concluded will have a total of $423,067. Present revenues are $56,374 a year, made up of $50,291 exchange, $3,751 toll and $2,332 miscellaneous. Expenses, not including depreciation, are $33,018, leaving a net of $23,356. As the yearly depreciation set up under the new investment will exceed $26,700 a year, the company points out that the existing rates are inadequate.

It suggests for Columbus a business, individual, rate of $5.50 a month; two-party business, $4.50; individual residence, $3.00; two-party residence, $2.50, and four-party residence, $2.00. At Duncan the new rates will be $3.00 for business and $2.00 for individual residence and rural service. The Columbus exchange serves 1,705 city and 473 rural subscribers.

Before filing its application with the state, the company submitted the proposition of a better and faster service to all of its patrons, the proposed rates being stated, and the agreement being that these should become effective whenever the new service was ready to be given.

On the Columbus exchange 94.63 per cent of the business subscribers gave their approval, and 73.74 per cent of the residence patrons, a composite percentage for the exchange of 77.80 per cent of all patrons. At Duncan 81.5 per cent of the town and 83.2 per cent of the rural subscribers signified their willingness. The proposition was also laid before the Columbus Chamber of Commerce where, after discussion, the proposal of the company was approved.

The expenditures will also include a new exchange building, the one now in use not being large enough or modern enough to take care of the added facilities.

State Supreme Court Decisions on Nebraska Compensation Law.

Two recent decisions of the Nebraska Supreme Court upon the application of the workman's compensation law will interest telephone companies because of the analogous situations that exist.

In one case the widow of the town marshal of North Bend applied for a $5,350 award for the death of her husband, caused by carbon monoxide from his automobile, which he attempted to repair in the closed garage at his home while the motor was running. In addition to his duties as a peace officer he held down a number of other minor city jobs, that he attended to whenever he had time.

He had no arrangement with the city by which he was paid for the use of his machine, and the insurance company maintained that, as he was not on his employer's business at the time of his death, he was repairing his own machine on his own premises on his own time. Thus he could not be said to have been injured in the course of his employment nor did his death arise out of his employment.

The court said that while it was true he had not yet started his day's work for his employer, the peculiar conditions of his employment, which called for his ser-

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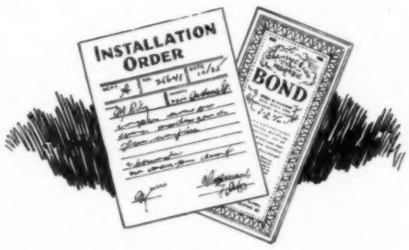

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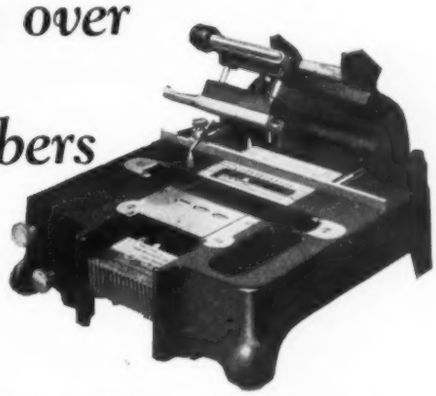

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ices outside of the regular hours of employment, brought him and the accident within the intent of the law, and that the employer was liable.

The other case was where a man who had been injured while working on the new capitol and paid compensation for an injury sustained, but who was thereafter unable to do heavy work, could not be barred from further compensation when two years after the accident he developed a condition of disablement.

The court held that the statute of limitations, which requires the filing of a claim within a year after the injuries were sustained, did not apply, because the latent condition did not develop until after that time had passed. All the law would require is that he file the claim within a year from the time he discovered his disabled condition.

Nebraska Farmers Agree to Higher Rates for Metallic Service.

Application has been filed with the Nebraska State Railway Commission by the Lincoln Telephone & Telegraph Co. for authority to substitute metallic magneto for grounded magneto service at its exchange at Guide Rock, Neb., on both the the town and rural lines.

The exchange is one purchased some time ago from local owners, and it is proposed to reconstruct the town and country lines and to otherwise improve the property. It is proposed to increase rural rates from $1.25 to $1.75 a month, business rates from $1.75 to $3.00, individual residence from $1.25 to $2.00 and to offer a new two-party residence service at $1.75.

The company filed with the commission consent petitions signed by 78 per cent of the rural patrons and 74 per cent of those in town agreeing to pay the increased rate upon the completion of the change to metallic and when the new plant is put into service. This is in pursuance of a policy suggested by the commission which finds better results follow rate orders when the changes have been explained in advance to subscribers than to wait until the orders issue, and company and commission draw fire.

The Northwestern Bell Telephone Co. also seeks approval of a metallic rural service it is offering for the first time in connection with its Clarkson exchange. It has purchased a farm line on the urgency of the owners, who have been getting switched service, and who, by their signatures, agree to pay $2.25 a month net for direct exchange service with the town patrons. The line will be rebuilt for the purpose.

Commissioner Argues Benefits of Rural Service and Rates for It.

Commissioner Randall of the Nebraska regulatory body held a hearing December 27 at Nelson on the application of the Nuckolls County Telephone Co., controlled by the Lincoln Telephone & Telegraph Co., for authority to close its exchange at Angus. A number of persons, interested largely from a matter of civic pride, appeared to protest against the abandonment of the exchange, and considerable testimony was taken.

The books of the company showed that the net loss by operation was approximately $1,200 a year, and that better service could be given from the Nelson exchange, which, being at the county seat, was more desirable. It also showed that there is but one store, one elevator, one church and a one-room school in the town.

Mr. Randall told the objectors that the state is without power to compel the company to maintain service at a loss, and that if it were to continue at Angus under those circumstances, that loss would have to be made up by increased rates at other exchanges, which would be neither fair nor equitable, and would not receive commission approval.

He asked the company to submit what schedule of rates would be necessary to make the Angus exchange self-supporting. These were $5.50 for business and $2.85 for residence and rural service. Mr. Randall said that he did not ordinarily decide a case offhand at a hearing, but he would then and there give the subscribers the alternative of accepting these rates and

(*Please turn to page* 49.)

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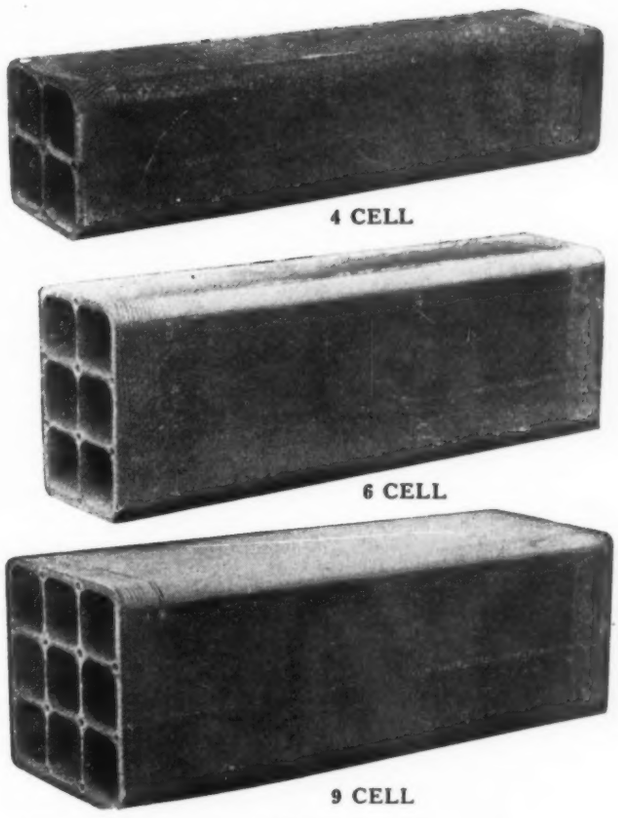

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Financial.

GENESEO, ILL.—Directors of the Geneseo Cooperative Telephone Co. voted recently to declare a dividend of 8 per cent on stock of the company for the year ending December 31. Checks for dividends will be delivered at the annual meeting of stockholders January 27. Capital of the company is $35,000 in 1,400 shares at par value of $25. There are 565 stockholders.

ODEBOLT, IOWA—The Sac County Mutual Telephone Co. has declared a 30 per cent dividend to its stockholders, the third consecutive year that such a dividend has been paid. The telephone company was organized in 1902 and E. E. Babcock has been its manager the past 22 years.

Franchise.

CALMAR, IOWA—At a special election held here recently the Northwestern Bell Telephone Co. was granted a franchise by a vote of 4 to 1, 155 votes being cast.

Elections.

NEW WINDSOR, ILL.—W. R. Tracy was elected president of the Union Telephone Exchange at the annual meeting in the town hall at New Windsor. Other officers elected are as follows: R. H. Streeter, vice-president; F. G. Blick, secretary, and H. G. Peterson, treasurer. F. G. Stohl and A. N. Peterson were re-elected directors and J. P. Petrie named a member of the board to succeed Mr. Tracy, the new president.

GILMAN, IOWA—At the annual meeting of the Gilman Telephone Co., held recently, officers for the coming year were elected as follows: President, R. H. Gannon; vice-president, Ira Green; secretary and treasurer, Ralph Hobbs. A. A. Palmer and G. H. Bennett were reelected to the executive board for three years.

PLYMOUTH, IOWA—W. F. Wrenn was elected president of the Plymouth Telephone Co. at the stockholders' annual meeting in Plymouth recently; John Brower, vice-president; W. O. Prescott, secretary, and Martin Hanson, treasurer. Directors announced that there would be no revision in rates during the forthcoming period. Mrs. Nellie Martin continues as operator and Frank Harmon, lineman in charge of repair and installation.

WINTHROP, IOWA—The Winthrop Mutual Telephone Exchange held its annual election recently, resulting in the reelection of all old officers, as follows: At Winthrop, H. C. Unbehaun; Byron township, W. M. Ferrin; Middlefield township, James Carmody; Fremont township, Harry Knowles, and Liberty township, George Slemmons.

HOLLOWAY, MICH.—K. G. Holloway was named president of the Holloway Telephone Co. at a meeting of the directors of that company, held recently.

Other officers chosen are: Edward De Groot, secretary and treasurer; directors, Peter Henry, Reuben Bowerman, Norman McConnell.

Construction.

CHICAGO, ILL.—At a recent meeting the board of directors of the Illinois Bell Telephone Co. approved an expenditure of $2,693,410 for new plant in the city of Chicago and $2,144,177 for Illinois outside of Chicago, making a total of $4,837,587. The total approved for 1929 is $37,717,738.

FORRESTON, ILL.—Work of remodeling its building has been started by the Forreston Telephone Co. It is understood that the company intends to move to its new location in the spring.

SPARTA, ILL.—That Sparta is to have a modern telephone system seems assured. Officials of the Sparta Telephone Co. have announced that 80 per cent of the business men and a large number of residents have signified their willingness to accept a slightly higher rate when a common battery system shall have been installed.

Money has been appropriated by the company for the construction of the lines and work will begin, it is said, as soon as the weather will permit.

LOCKE, MICH.—The Locke Mutual Telephone Co. has completed the installation of several metallic or return wire lines toward the west, which improves service, and plans further change from the old ground wire system yet in use here on several lines.

NEW YORK, N. Y.—J. S. McCulloh, president of the New York Telephone Co., has announced that the board of directors at the regular monthly meeting held December 26 authorized the additional expenditure of $17,098,125 for new construction throughout the state. This brought the total appropriations for 1929 to $123,995,392, of which $106,673,520 has been devoted to the enlargement of facilities in the New York metropolitan district.

MARSHFIELD, WIS.—The Marshfield Telephone Exchange has completed arrangements for an enlargement of the switchboard in its central office, Manager Herman Hoerl announced. The additional section will consist of three operator positions, increasing the number of operator positions to 12, one of which will be added to the long distance service and the others to the city service.

Miscellaneous.

BELMONT, IND.—The Wilson Telephone Co. was sold to William Exner recently.

INDIANAPOLIS, IND.—There is a Santa Claus. If you don't believe it, ask some of the officials of telephone companies in Indiana. The companies began receiving checks about the first of the year from the government as refunds for overpayment of federal income tax. Among those receiving these welcome gifts were: New Home Telephone Co., Indianapolis, $752; Home Telephone & Telegraph Co. of Fort Wayne, $5,875; and the Lafayette Telephone Co., Lafayette, $896.

NEW RICHMOND, IND.—J. L. McNeil, realtor, reports the sale of the Cayuga telephone system, which was owned by J. E. Russell, to Clyde Beers of Clayton, Ind. The deal included the residence property of Mr. Russell.

IDA GROVE, IOWA—At a meeting of the directors of the Ida County Telephone Co. Robert Lipton was elected treasurer of the company to succeed the late Ben S. Noble, who had held the position since the organization of the company in 1899.

NEVADA, IOWA—The Story County Independent Telephone Co. will hereafter be known as the Iowa Continental Telephone Co., the officers of the company have decided. There will be no change in policy or management.

The company, with head offices here, operates exchanges at Nevada, Roland, Story City, Cambridge and Maxwell, and has a network of country lines all over the county.

DONALDSON, MINN.—Following the sale of the Farmers' Telephone Co. of Donaldson to L. H. Saverin of Donaldson the state of Minnesota disposed of its last telephone company. The company was purchased by the state at a judicial sale to enforce payment of $268.50 gross earnings taxes.

ST. LOUIS, MO.—Nearly 16,000 new telephones have been added in Missouri since January 1, 1929, by the Southwestern Bell Telephone Co. There are now 440,815 telephones served by the Southwestern company in the state.

EGG HARBOR CITY, N. J.—The Egg Harbor City Telephone Co., one of the few remaining Independent telephone companies in New Jersey, has voted to sell to the Bell Telephone Co. of New Jersey for $70,000, which price includes the exchange building, equipment and right-of-way.

AUBURNDALE, WIS.—J. C. Kieffer, who has been identified with the Auburndale Telephone Co. since its organization more than 15 years ago, has resigned as manager, the last position which he held with it. For many years previous to that time, when it was owned co-operatively by patrons, Mr. Kieffer was president. In 1928 the stock was sold to Harry Brooks of Clintonville. Mr. Kieffer remained as manager of the company.

The Pittsville and Babcock lines were later bought by Mr. Brooks and these exchanges were also included in Mr. Kieffer's territory.

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WHAT THE COMMISSIONS ARE DOING.

(*Continued from page* 44.)

keeping the exchange open. Nobody would agree, claiming that was more than the service was worth.

When one farmer said that the farmers were hard up and could not pay more than a nominal figure for telephone service, he was vigorously disputed by Commissioner Randall, who operates a number of farms. He said that if a farmer was hard up it was because he was trying to satisfy a champagne appetite on a beer income, was devoting too much time and money trying to live on the same scale as persons of larger income, and spent too much time working his automobile on the pleasure highways than in attending to the job he had assumed.

He said that on his way to Nelson he had noted a great deal of expensive farm machinery sitting in field corners and rusting away. That kind of farmers, he added, always will be hard up, and never will think they can pay a fair rate for telephone service.

When it was intimated that some of the farmers would have to order their telephones out if rates were increased, Mr. Randall said that rural service was worth a lot more to a farmer than it cost him; and that in this day and age a farmer who was without telephone did not think much of his wife.

Asked to explain this, he said that farmers went to town six times where their wives went once, and that the telephone was the only instrument by which the wives could keep in touch with the neighbors and live a wholesome social life. He also pointed out the invaluable character of telephone protection, the presence in the house of a telephone over which a wife may call for help when her husband, out in his fields, has left her alone and open to the insults or assaults of wayfarers.

Ohio Bell to Acquire Property and Make Improvements.

The Ohio Bell Telephone Co. was recently authorized by the Interstate Commerce Commission to take over the properties of the Wintersville Telephone Co., Wintersville, Ohio, which served 99 subscriber stations as of December 31, 1928.

The small plant of the Wintersville company is totally inadequate to render the amount or kind of service required in that territory, the commission found, and the company is not in position to make the comparatively large investment required to provide the necessary improvements and additions to plant. Upon acquiring the properties the Bell company will proceed at once to complete such work as may be required to provide satisfactory service.

On July 16, 1929, the Bell company contracted to purchase the properties of the Wintersville company for $3,000. An ap-

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Universal Manhole partially set up showing construction.

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praisal made by the general plant manager of the Bell company found the reproduction cost new of the properties to be $7,648, and less depreciation, $4,360.

In 1928, operating revenues and operating expenses of the Wintersville company were $3,088.95 and $2,960.09, respectively.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

December 23: After an investigation on its own motion into the rates charged by Associated Telephone Co., Home Telephone Co. of Covina, Huntington Beach Telephone Co., Redondo Home Telephone Co., Laguna Beach Telephone Co. and Santa Monica Bay Telephone Co., all of which are now merged under the name of the Associated Telephone Co., Ltd., and includes service in the cities of Long Beach and San Bernardino, the commission ordered reduced rates into effect on February 1, 1930, which are estimated to save consumers $38,000 per year. In addition to this reduction, officials of the consolidated company testified that the company will expend approximately $2,000,000 during 1930 for additions and betterments and improvements in the service.

ILLINOIS.

December 23: Herrick Limited Telephone Co. authorized to file a modified schedule of rates for Herrick and vicinity, providing for these annual charges: Business stations, $18; residence stations, $9, and rural multi-party service, $9.

December 23: Pike County Telephone Co., Pittsfield, authorized to purchase all the outstanding capital stock of the Calhoun Telephone Co. for $32,500.

December 23: Proposed rates suspended of Findlay Mutual Telephone Co. for service in Findlay, Shelby county.

January 8: Hearing on application of Illinois Bell Telephone Co. for a new schedule of rates at Edwardsville.

INDIANA.

December 21: Supplemental petition filed in the petition of the Southern Indiana Telephone & Telegraph Co. of Seymour to purchase the Decatur County Independent Telephone Co., asking to sell a stock issue at not less than 91 per cent of par value for obligations now outstanding for 100,000 par value of 7 per cent, cumulative preferred stock.

MICHIGAN.

December 18: Hearing held on application for the issuance of $25,000,000 additional capital stock by the Michigan Bell Telephone Co.

MINNESOTA.

January 13: Hearing at Green Isle in the matter of the petition of the village council of Green Isle for investigation regarding telephone service in that village and the surrounding community.

MISSOURI.

December 10: Order issued authorizing Osage Valley Telephone Co., Clinton, to place in effect standard toll rates for long distance service on a new toll line the company has constructed connecting its seven exchanges with another system of telephones in that section of the state.

December 18: Missouri Standard Telephone Co. authorized to file a toll rate between Forsythe and Branson and Forsythe and Hollister in accordance with the views expressed by the commission in its report, the rates to be effective on the first day of the month after the establishment of a metallic telephone circuit between those towns; company was also

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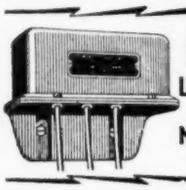
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authorized to file a schedule providing for a toll rate between Branson and Rockaway Beach and between Hollister and Rockaway Beach providing for a toll charge of 10 cents for the first five minutes and five cents for each additional five minutes, effective after a metallic line is established between Rockaway Beach and Branson and a switchboard is installed at Branson; company also authorized to file seasonable rates to apply to tourists or other persons desiring telephone service for a limited period of time.

NEBRASKA.

December 23: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to increase rates at its Davenport exchange, the new schedule to become effective when service has been changed from grounded to metallic; found to be reasonable and in conformity with wishes of patrons, and order issued accordingly.

December 23: In the matter of the application of the Northwestern Bell Telephone Co. for authority to establish a rate of $2.50 gross and $2.25 net at its Clarkson exchange, for rural service; found to be reasonable and in accord with the petition of rural patrons on file; order issued accordingly.

December 26: In the matter of the application of the Beaver Valley Telephone Co., of Danbury, for validation of a rate of 25 cents for loud extension bells and 25 cents extra for desk sets, and also for authority to cancel a 10-cent non-subscriber call rate; held that the rates are those in standard use in the state and reasonable, and the other request being in the nature of a reduction, authority issued without necessity of a hearing.

December 28: Application filed by the Continental Telephone Co. for authority to increase rates at its exchanges at Columbus and Duncan, formerly composing the plant of the Platte County Independent Telephone Co., contingent upon the transformation of the town service to the automatic type and metallized rural lines; supported by consent petitions from patrons affected.

OHIO.

December 18: Hearing on Ohio Bell Telephone Co. rate case. Evidence taken relative to valuation of central office equipment. Hearing continued indefinitely to permit counsel to prepare for cross-examination of expert witnesses who had placed a valuation on the company's properties.

January 13: Hearing of the rate case of Cambridge Telephone Co. continued to this date from December 17.

OKLAHOMA.

December 23: Hearing in the matter of the Southwestern Bell Telephone Co. vs. J. F. Firestone, owner of the Catoosa Telephone Co., alleging an amount of $239.42 is due it.

WISCONSIN.

December 19: Commonwealth Telephone Co. authorized to issue $227,000 cumulative preferred 6 per cent stock to pay, in part, for its acquisition of companies in the following cities and towns: Cambridge, Cottage Grove, Couderay, Lone Rock, Luxemburg, Marathon, Pardeeville, Portage and Stratford, and also the Western Crawford County Telephone Co., the Edgar, Cassel & Emmet Telephone Co. and the Edgar Local Telephone Co. The total value of the companies purchased was estimated by the commission at $418,000.

December 27: Hearing in the matter of disagreement between the Northwest Telephone Co. and the Dekorra Farmers' Mutual Telephone Co.

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A4, G2, H5, K1, S4, S10.
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K3.
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F3.
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H8.
Books, Telephone
M8.
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N1.
Brackets, Drop-Wire
P8, S10.
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A5, A7, B6, E5, H1, K1, R3, S10
Cable Compound
A7, N10.
Cable Rings
E4, N5.
Cable Splicing Joints
M6.
Cable Terminals
C8, G2, R2, S2, S10.
Clamps, Ground (Plates, Cones)
G2, L2, P2.
Clamps, Guy
A7, C8, E4, G2, L2, M6, N5, R2.
Climbers
G2, C12, K3.
Clips, Cable
A4, G2, H7, L2, M6.
Clips, Testing
F5, G2.
Condensers
A4, A9, G2, K1, L2, S9, W3.
Conduit, Clay
C6, N3.
Conduit, Treated
C13, G2.
Conduit Rods
C9, G2.
Connectors, Test
C8, R2, S8.
Cords, Telephone and Switchboard
A4, A9, G2, K1, R5, S9.
Counters
V3.
Directory Publishing and Advertising Service
B7.
Cross Arms
A4, A10, E1, G4, K1, S10, T7, W6.
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R3.
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G2, H5, K1, L3.
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H8.
Guy Stretchers
H3.
Hangers, Cable
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A4, A5, K1, L3, M6, S3.
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C16, G2, H2, P2, S10, T3, U1.
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N10, S7.
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B10.
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A4, K1, S9.
Jacks, Pole
C9, G2, K1, T2.
Jacks, Pole
A4, K1, L3, S9, S10, W3.
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L5.
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T4.
Telephone Typewriters
T4.
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R3.
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P7, W4.
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T2.
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F2, I4.
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A4.
Wire, Copper
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A5, A7, G2, I1, R3, P2, S10, T7.
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